TRANSPORT SCOTLAND

Annual Landscape Management Report

STRU South East

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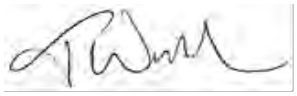
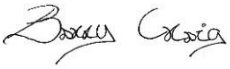
Draft for comment	Name: Tracy Smith Signature:  Date: 30th May 2019	Name: Michael Peile Signature:  Date: 3rd June 2019	Name: Tom Wallace Signature:  Date: 4th June 2019
Rev 01 - Final	Name: Michael Heald Signature:  Date: 9th August 2019	Name: Barry Craig Signature:  Date: 14th August 2019	Name: Tom Wallace Signature:  Date: 15th August 2019
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Executive Summary

This report is prepared in accordance with the 4th Generation Term Contract for Management and Maintenance of the Scottish Trunk Road Network South East Unit Schedule 7 Part 4 Section 1.6 Annual Landscape Management Report.

This executive summary aims to offer a short statement on the main issues arising from the Report, being the following:

Issues with the management of injurious species:

- Despite the spray programme undertaken in 2018 on the main infestation areas along the route, invasive weeds such as giant hogweed and rosebay willow herb still have a great presence in Unit, and its reduction remains one of the main objectives of the Programme for the following year.

Issues with the trees:

- There are many points along the Unit where overgrown trees were identified as encroaching on site lines and obscuring Traffic Scotland cameras, directional and informative road signage. This resulted in a number of schemes being undertaken within the constraints of the 2018/19 landscape budget.
- Some trees have been subjected to wind blow along the whole Unit.
- Woodland mixes that are maturing require thinning and removal of weak and diseased trees in accordance with good woodland management. Diseases such as ash dieback continue to spread although no additional cases of the larch disease (Phytophthora ramorum) have been detected.
- There are Health and Safety issues relating to the cyclic maintenance programme. Some minimal frequency cut areas should be left to develop as natural succession or nature conservation areas, especially where the maintenance works are particularly risky.

Contents

1 Introduction

This report is developed on a route by route basis, following the routes as identified by the landscape strategy and landscape development plan.

The aim of this report is to provide an annual review of the effectiveness of maintenance activities and to identify any new landscape areas due to the completion of schemes by third parties. This report also provides a review of the effectiveness of any schemes undertaken by the Operating Company.

1.1 Report Layout

The chapters included in this report are as follows:

- Chapter 1 Introduction which provides the purpose of the report
- Chapter 2 General condition of the network
- Chapter 3 Progress of the pesticide plan
- Chapter 4 Performance of Contractors
- Chapter 5 New landscape areas
- Chapter 6 Operations to enhance Biodiversity
- Chapter 7 Unforeseen Issues and limitations
- Chapter 8 Details of significant amendments the landscape inventory in IRIS

Appendices of the report include a grassland report, injurious species report, pesticide plan, records of road kill and a deer management plan. Within Chapter 2 information on the general condition of the routes is provide as follows.

Grassed Areas

This section describes the current condition of the grassed areas along the route. Further information can be found in the Grassland Report which can be found within Appendix E. The grassed areas within this network are maintained under cyclic routine operations and in accordance with Appendix 30/7 Grass, Bulbs and Wildflower Maintenance.

Bulbs and Wildflowers

The bulb and wildflowers within this route are maintained under cyclic routine operations and in accordance with Appendix 30/7 Grass, Bulbs and Wildflower Maintenance. Route

inspections have identified many additional wildflowers and bulbs found on the network and these are currently being uploaded into IRIS.

Invasive Species

General weed control operations are undertaken twice per year in kerbs, filter drains and central reservations, in the period from April to October and maintained under cyclic routine operations in accordance with Appendix 30/2 Weed Control. The Invasive Weed Register has been developed and used as a reference to treat and control the infested areas as well as to monitor the operations. Further information can be found within the Injurious Species Report and Management Plan found within Appendix A and within Appendix B Pesticide Plan.

Scrub and Shrub Areas

Scrub areas are also controlled and removed where necessary always with a previous inspection of the wildlife. Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting. Amey have and will engage with the local community and relevant stakeholders to enhance the shrub beds where they are located within or next to town and village centres. Priority areas for improvement will be highlighted within the Landscape Development Plan. Scrub and shrub areas are maintained under cyclic routine operations and in accordance with Appendix 30/10 Maintenance of Established Trees and Shrubs.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation are identified during routine inspections, and schemes proposed for the future to keep them in a safe condition, or to undertake any replacement.

Dead or dying trees on the highway and adjacent land are also identified during these inspections. Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed in accordance with the procedure agreed with Transport Scotland.

Hedges, trees and woodland areas are maintained under cyclic routine operations and in accordance with Appendix 30/10 Maintenance of Established Trees and Shrubs.

Wetlands, Balancing Ponds and the Water Environment

The wetlands along this route include all the burns and open ditches crossing or running alongside the road, and several SuDS ponds within the trunk road boundary. A number of SuDS ponds have become overgrown on the network, these are currently being tackled with a number of vegetation management schemes completed to date. Amey continue to update the inventory information in IRIS and review the maintenance regime to allow us to carry out the contractual requirements. Water bodies are maintained under cyclic routine operations and in accordance with Appendix 30/11 Management of Waterbodies.

Biodiversity

Biodiversity along the route is maintained in accordance with Fitting Landscapes policy document and in line with principles detailed within Transport Scotland's Biodiversity Reporting Duty 2011 – 2014 as follows:

- Species & Habitats - To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats;
- Landscapes & Ecosystems - To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice;
- Integration & Co-ordination - To develop an effective management framework that ensures biodiversity is considered in all decision making;
- Knowledge – To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners;

In addition, the STRU SE network passes through several Local Authority Councils. These all have produced Biodiversity Action Plans, which include proposed measures to increase biodiversity within the area. These measures include, identify where positive management, projects or management plans should be implemented; identify Local Geodiversity Sites; identify the current benefits and opportunities arising from local biodiversity and development of integrated management to protect and conserve habitats.

Within the STRU SE network, these are implemented through the following:

- Biodiversity planting (such as wildflower meadow or woodland)

Investigations are currently being undertaken to reduce grass cutting out with sightlines to allow for natural regeneration and habitat creation. Many grass verges present signs of erosion from pollution such as salt spray and alternative salt tolerant seed mixes are therefore currently being investigated. Investigations will be also undertaken into the suitability of alternative grass seed mixes to use on slopes where erosion is an issue which may establish in these locations reducing the erosion.

- Protecting and enhancing existing native flora and fauna

  Before any scheme is undertaken, during the bird nesting season, ecological and landscape inspections for both nesting birds and wildlife are undertaken. In addition, schemes within watercourses are scheduled wherever possible out with fish spawning seasons. Working in partnership with maintenance operatives and sub-contractors for spraying to establish alternative control droplet techniques and good practice to reduce unnecessary weed killing and spray drift. An environmental scoping assessment (ESA) is undertaken for each scheme prior to implementation.

- In addition, Amey have identified all the environmental designations adjacent to the network to assist in retaining, enhancing and increasing the biodiversity of these areas.

- Planting of native species in accessible areas for the enjoyment of the public - Between established woodlands, investigations are currently being undertaken out with sightlines to allow for natural regeneration and habitat creation. Wherever possible, tree planting along routes is undertaken using native tree species.

- Information and communication - Through community and stakeholder engagement, local residents can have input into their local landscape decisions and can gain information regarding Amey's role in preserving and enhancing the local biodiversity.

  Environmental awareness training for all Amey personnel is currently being undertaken, emphasising the importance of the preserving, protecting and enhancing the biodiversity surrounding the routes.

2 Route Details

2.1 Route A1

2.1.1 Condition of Landscape Areas

The landscaping contained within the highway boundary reflects the rural nature of most of the route. Most the grasslands are under a low or minimal frequency.

Cutting regimes with frequency timing reflecting areas of wildflower and bulb maintenance requirements. Roundabout landscape features are generally poor with low quality planting offering little in terms of visual amenity and biodiversity. Out with boundary hedging and specimen tree planting there are significant linear areas of native woodland planting which need infrastructure maintenance in accordance with good horticultural practice. Proposed and recently completed woodland maintenance will and have promoted healthy tree growth, remove weak species, promote natural regeneration and species diversity. Common Ragwort and Rosebay willow herb is prevalent throughout the route with weed control operations targeting the recorded infestations of Giant hogweed.

The proactive management of Bee Orchid areas has been implemented to preserve and enhance the species presence.

The following sections describe the current conditions of the landscape surrounding the A1 from the A720 Old Craighall junction to the national boundary with England, within the 2018 to 2019 reporting period.

Grassed Areas

Most of the grassland areas along this route are general grassed verges that are under a low maintenance regime of between 1 and 3 cuts per year. The condition of these areas varies along the route, but issues like erosion and the presence of weeds are common. They are often partly encroached by gorse and bramble, different herbaceous plants and invasive species.

There is an area of amenity grass within the village of Grantshouse, which is a wider grassed verge on the southbound carriageway of the route that separates the settlement from the road and has a medium frequency cut of 7 cuts per year. According to the Cyclic programme, all laybys, bus stops, junctions and roundabouts are also maintained on a medium frequency regime with 7 cuts per year.

Photo 1 – Wide Verge at Grantshouse illustrating daffodils

Sward health is variable along the route. Within flat verges it appears in a very poor condition: the grass is very sparse, and the growth is weak, quite often yellowing. The edge of the verge presents signs of being sprayed with pesticide, affecting the grass, leaving patches of bare ground that leave room for other species to grow, mainly weeds. The ground shows signs of salt splashing, erosion or compression.

Litter is also present in the verges, especially on the laybys. In large laybys separated from the carriageway and slightly sloping verges, the grassed areas appear to be in better condition, but a variety of weeds intermingle with the grass. Some overrun is evident on many of the grass verges beside the laybys. There are some wider areas of grass at the end of the route (border with England) where the grass presents a better state of health. In these areas, there is a thick and uniform ground cover, the sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and the verges are free from litter.

The main local objective for this route is the reduction of giant hogweed. There are high density infestations of *Heracleum mantegazzianum* (giant hogweed) along the route (refer to Invasive Species Section). A review of the larger *Ulex europaeus* (gorse) areas will take

place with a view to management of the potential fire risk if identified and where appropriate the frequency of grass cutting will be re-evaluated.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

The verges of this route are maintained under cyclic routine operations and in accordance with appendix 30/7 Grass, Bulbs and Wildflower Maintenance. There are 484m^2 of daffodil bulbs within grassed areas along this route and therefore the timing of the first grass cut is programmed accordingly.

There are other areas with spring bulbs noted, both for snowdrops adjacent to Houndwood and to Ayton.

Cowslips are also evident throughout the network (see Photo 2 below).

Photo 2 – cowslips within verge areas

Invasive Species

Common ragwort and rosebay willow herb are covering large areas of the grassland along this route. There are isolated areas of giant hogweed all along the route, but the major concentration can be found close to the Old Craighall Junction.

A pesticide treatment regime is currently in place along the route. The giant hogweed identified within the Invasive Weed Hotspot Register, with a view to reducing the density of weed growth over the growing season and subsequently the density of the infestation is being reduced. Photo 3 and 4 below show the reduction in giant hogweed density from 2016 to 2018.

Photo 3 - Giant Hogweed adjacent to the Old Craighall Junction 2016

Photo 4 - Giant Hogweed adjacent to the Old Craighall Junction 2018

Other invasive weeds along the A1 route are summarised in Table 2.2 and are discussed further in Appendix A Injurious Species Report and Management Plan.

Table 2.1 Invasive Species Route Infestation

Injurious Species	No. of Recorded Infestations
Giant Hogweed	15
Rosebay Willowherb	86
Japanese Knotweed	01
Common Ragwort	37

Scrub and Shrub areas

There are several areas along the route where gorse is spreading through the grass areas and encroaching into the verges (close to Abbotsview Roundabout) and also some areas were the hedges are overgrown.

Encroachment of scrub and shrub species including gorse was addressed westbound between Dunbar and the Edinburgh bypass A720 with further vegetation management programmed for financial year 2019/20 eastbound.

The extent of any remaining gorse areas that have not been addressed by the scheme completed and proposed will be recorded during the planed route tours and proposals to control its spread reducing any potential fire risk will be prepared for consultation.

IRIS holds records for 7 areas of shrubs along the route.

Hedges, Trees, and Woodland

There are 5,276m of hedgerows adjacent to the A1, with numerous trees both within hedgerows and singly, forming part of the highway boundary.

Hedges, trees and other encroaching vegetation should be identified during routine inspections in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections. Many mature trees were lost due to construction upgrading works, age, Dutch elm disease and stresses related to being close to the road.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed.

The Statutory Plant Health Notice on positive *Phytophthora ramorum* on larch issued in October 2017 for the woodland areas on the M8 Junction3, highlights the need to closely monitor any woodland areas within the Unit that contain larch trees, as well as any possible new areas of *Rhododendron ponticum*, which acts as a host plant for the pathogen.

Wetlands, Balancing Ponds and the Water Environment

The A1 crosses numerous watercourses including several major watercourses that are monitored by SEPA (Pease Bridge Glen, River Esk (Lothian), River Tyne, Biel Water, Spott Burn, Dry Burn/Woodhall Burn, Thornton Burn/Thurston Mains Burn, Dunglass Burn/Old Hamstocks Burn, Tower Burn (Pease Burn), and the Eye Water which runs parallel to the A1 along much of its length). There are also numerous drainage ditches that are culverted beneath the A1 and that run close by.

There are a number of SuDS ponds throughout the route which have been identified as requiring additional management and schemes will be included in the LDP to manage these appropriately. A vegetation clearance scheme was completed in March 2017 at Bankton SuDS pond. In 2018/19 a woodland management scheme was undertaken to address encroachment, dense vegetation and access issues at two SuDS pond locations, Abbotsview and Oaktree.

Biodiversity

Amey are currently in discussions with several organisations to protect a colony of bee orchids that are currently growing on the grass verge of the A1 near Thorntonloch, East

Lothian (see photo 5). These bee orchids are Britain's most northerly and we are ensuring these are preserved by carrying out the following mitigation:

- All areas with bee orchids are cordoned off to ensure no grass cutting will be undertaken at the wrong time of year (see Photo 5 below).
- Grass cutting will be carried out within the cordoned areas once in May and later in July when orchid seed has been scattered. Photo 6 below shows bee orchid within the grass verge.

Photo 5 – Area with bee orchids cordoned off for protection

Photo 6 – Bee Orchids growing on the A1 grass verge

Along the A1 there are conservation areas at Tranent, Haddington, East Linton, Ayton, Dunbar, Innerwick and Cockburnspath. Garden and Designed Landscapes can be found at Elvingston crossing the A1, west of Gladsmuir, Stevenson House east of Haddington, Dunglass House, south west of the A1 and Broxmouth Park, northwest of the A1.

The following nature conservation designated areas are within 2km of the A1:

- The Firth of Forth SPA (Site Code 8424) which has been designated for 28 species of birds.
- The Firth of Forth Ramsar (Site Code 8499) site which has been designated for 10 species of birds.
- The Firth of Forth SSSI (Site Code 8163) which has been designated for 40 species of birds, butterflies, fen, marsh and swamp (wetland), geomorphology, igneous petrology, inshore sublittoral sediment (marine), littoral sediment (coast), littoral sediment (marine), mineralogy, neutral grassland, other invertebrates, palaeontology, quaternary geology and geomorphology, stratigraphy (upper and lower carboniferous), supralittoral rock (coast), supralittoral sediment (coast) and vascular plants.

- Dalkeith OakWood SSSI has been designated for its broad-leaved, mixed and yew woodland (wood pasture and parkland), lichen assemblage and other invertebrates (beetles).
- Bangley Quarry SSSI has been designated for its igneous petrology (Carboniferous – Permian Igneous).
- Garleton Hills SSSI has been designated for its Mineralogy (Mineralogy of Scotland).
- Traprain Law SSSI has been designated for its lowland acid grassland, lowland calcareous grassland, carboniferous - Permian igneous and its lichen assemblage.
- Barns Ness Coast SSSI has been designated for its littoral sediment (coast) (saltmarsh), stratigraphy (Lower Carboniferous [dinantian - namurian (part)]) and its supralittoral sediment (coast) (sand dunes and shingle).
- Pease Bay Coast SSSI has been designated for its palaeontology (silurian - devonian chordata), stratigraphy (lower carboniferous [dinantian - namurian (part)]) and its supralittoral rock (coast) (maritime cliff).
- Pease Bridge Glen SSSI has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland) and its bryophyte assemblage.
- Burnmouth Coast SSSI has been designated for its other invertebrates (fly assemblage), stratigraphy (Lower Carboniferous [dinantian - namurian (part)]), structural and metamorphic geology (Caledonian structures) and its supralittoral rock (coast) (maritime cliff).
- Berwickshire Coast (Intertidal) SSSI has been designated for its littoral rock (marine) (rocky shore) and littoral rock (marine) (sea caves).
- Northumberland Shore - Lamberton Beach to Spittal SSSI has been designated for its littoral rock habitat and the following bird species ringed plover, golden plover, sanderling, purple sandpiper, redshank, turnstone and little tern.
- Berwickshire and North Northumberland Coast SAC have been designated for its inshore sublittoral rock (marine) (reefs), littoral rock (marine) (sea caves), littoral sediment (marine) (intertidal mudflats and sandflats), littoral sediment (marine) (shallow inlets and bays) and mammals (marine) (grey seal ([*Halichoerus grypus*]).

- Northumbria Coast SAC has been designated for its breeding season populations of little tern and its overwintering populations of purple sandpiper and turnstone.

2.1.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A1	Gras Cutting Low Frequency	Three cuts undertaken in May July and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Grass cutting dates for A1 are programmed to allow Bee Orchid mitigation to be implemented. Gorse developing in some of these grass areas
A1	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	Scottish Borders Council are sub-contracted by Amey to cut the areas at Grantshouse on the A1
A1	Weed Spraying	17/05/2018 18/05/2018 28/05/2018 09/08/2018 10/08/2018 20/08/2018	This has been effective and in accordance with the contract. Giant Hogweed density has been significantly reduced on the A1 near Old Craighall Roundabout – see Photo 3 and 4	Continued monitoring of Giant Hogweed should be undertaken

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A1 – Old Craighall Rbt to Thistley Cross Rbt	Woodland Management	September/October 2018	The woodland management scheme has been effective in removing trees and scrub that had the potential to become hazardous to the highway network. The works have also created easier access for operatives carrying out routine maintenance works on the verges. Improved visibility for all road users has been achieved	The scheme took place on the A1 and the extents of the works went from Old Craighall Roundabout to Thistley Cross Roundabout southbound. The woodland management works included a mixture of felling, thinning, coppicing, scrub control and tree surgery works
A1/SuDS Ponds Bankton Oaktree Abbotsview	Vegetation Clearance	March/April 2018	The landscaping works have provided access to the overgrown SuDS Ponds and allowed maintenance works to be undertaken in and around the pond, including maintenance of security fencing	The SuDS Ponds were not accessible due to dense vegetation and drainage issues were a problem at these areas
A1	Shrub Bed Weed Maintenance		Shrub bed maintenance is not effective, most shrub areas are in a	New shrub bed landscape designs are being proposed for Spott

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
		Four times per year during growing season	poor condition and perennial weed growth is common. Hand weeding is a temporary solution, and new landscape proposals are required for most of these areas.	Roundabout and Thistley Cross Roundabout during 2019/20.

2.1.3 Unforeseen Issues and Limitations

There have been no unforeseen issues or limitations apart from those mentioned in Chapter 7 identified along the A1 route in the 2018 to 2019 reporting year.

2.1.4 Landscape Development Plan (LDP) and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.2 below. There are 7 other schemes remaining within the LDP and Landscape Strategy of which 4 are due to be completed within the 2019/20 landscape budget. The remaining 3 schemes have the lowest priority rating and will be considered for future budgets.

Table 2.2: Schemes that have been completed

Route	A1	
Scheme Name	18/SE0313003	
Location	Sheet 1 to 14	Old Craighall junction to Thistly Cross Roundabout
Synopsis	Woodland, scrub and vegetation management	
Reasons for selection	Via route tours and inspections	
Cost estimate	I £5169.00 D £3962.55 C £171,854.79	
Priority rating	1	

State of Development	Completed
Effectiveness	The woodland, scrub and vegetation management improved forward visibility, opened up areas to increase biodiversity through natural regeneration. Improved health of existing tree stock and removed identified areas of gorse.

Route	A1	
Scheme Name	17/SE0313024	
Location	Sheet 8 to 9	Abbotsview and Oaktree SuDS Ponds
Synopsis	Woodland, scrub and vegetation management to allow access to ponds for maintenance.	
Reasons for selection	Via route engineer	
Cost estimate	C £42344.34	
Priority rating	1	
State of Development	Completed	
Effectiveness	Access to the SuDS pond to allow future pond and safety fence maintenance was improved by undertaking woodland, scrub and shrub cut back and removal where required.	

2.1.5 Specific Opportunities for Improvement

There are some opportunities to introduce wildflowers or planting that would reduce the need for maintenance and encourage biodiversity:

- Enhancement planting in Burnmouth Roundabout. Enhancement planting in Thistly Cross Roundabout. It should be noted that there will still be a requirement to maintain the sight lines and therefore undertake appropriate grassland management at this location.
- Enhancement planting in Spott Roundabout, amelioration of visibility splay soil and reseeding of a verge mix with wildflower seeding between any areas of planting and the visibility verge. These improvements will be submitted for consideration as a scheme proposal for financial year 2019/20.
- Enhancement planting in the wider areas in the border with England.

- Specimen Tree and Wildflower Planting Opportunity between Pease Bay & the A1107 Jct. linking to existing landscape characteristics.
- On embankments, north and southbound, route tours will identify locations where grass cutting will be reduced out with sightlines between established woodlands to allow for natural regeneration and habitat creation.

Identified Woodland Management Schemes

- A1 Old Craighall to Thistly Cross Rbt (N/B) - Woodland management is proposed to compliment the vegetation management undertaken in 2018 /19 south bound. This will address unhealthy tree mix specimens, promote natural regeneration encouraging biodiversity address future visibility issues and ease access for grassland maintenance and aid accessibility for litter collection.
- A1 Ayton Castle to Burnmouth – As a result of public enquires and representation from the Route Engineer woodland management requirements have been identified for vegetation adjacent to the highway.

2.2 Route A7

2.2.1 General Condition of the Landscape Areas

The landscaping along this route within the network boundary is in an acceptable condition although areas of mature network screen native tree planting mixes require maintenance associated with the current woodland mix age. The grassland sward is generally acceptable with salt spray damage prevalent in certain locations which has resulted in recent woodland management schemes and identification of further schemes. Litter issues exist within the laybys and are targeted through litter collection activities in accordance with the contractual requirements. Rosebay willow herb is common throughout the network although weed control will be focussed on managing the Japanese knotweed identified within an existing grass verge close to the road edge and associated road vehicle barrier.

The mature boundary hedging along the route is in good condition although the route contains a number of dead trees due to Dutch Elm disease and Ash dieback which have been addressed either direct or through adjacent landowner notifications. The existing roundabout in Hawick is in poor condition due to current vegetation characteristics and accessibility issues for maintenance works. A new design has been undertaken to reduce maintenance operations and improve the local environment promoting civic pride.

The following sections describe the current conditions of the landscape surrounding the A7 within the 2018 to 2019 reporting period.

Grassed Areas

Further information can be found in the Grassland Report which can be found within Appendix E.

Most of the grassed verges along the A7 route are under a low maintenance regime with 3 cuts per year. In the village of Ashkirk there is an area of medium frequency cut, with 7 cuts per year, and there are areas of high frequency with 14 cuts per year in Kingsknowe, Selkirk and Hawick.

The condition of these areas varies along the route, but issues like erosion and the presence of weeds are common. The designated landscape grass areas will be reviewed to determine whether the current frequency of cuts is appropriate for the locality.

In general, the health of the sward along this route seems better than other routes throughout the Unit, but it varies in relation to the surrounding landscape. The sward should be managed to develop characteristics which will complement the existing adjacent

landscape character along the route in accordance with the principles of the Fitting Landscapes policy document.

Most of the grassed verges along the route present a good state of health comprising of a dense sward with a variety of weeds and herbaceous plants growing within. There are some signs of salt spray and erosion on the edges, especially where the road is flat, and where there are filter drains or kerbs that are treated with pesticides.

The presence of litter is low, apart from the laybys, where there are also signs of overrun.

Litter collection activities to be targeted at locations where vehicles stop such as laybys and road junctions. A higher grass cutting frequency may be appropriate in locations of higher littering to aid collection activities. Verges adjacent to woodland, hedgerows or stone walls are often very narrow and steep, and the soil appears eroded and bare or covered with weeds. In the damper areas of the route and also on the slopes, there are some reeds growing through the grass areas.

Bulbs and Wildflowers

The verges of this route are maintained under cyclic routine operations and in accordance with appendix 30/7 Grass, Bulbs and Wildflower Maintenance. There are 3808 m2 of daffodil bulbs within grassed areas along this route and therefore the timing of the first grass cut is programmed accordingly.

In addition to that, 404 m2 of daffodil *Narcissus* species bulbs grow in woodland areas. The route tours also highlighted an additional 31 locations for daffodils resulting in an additional 487m2 within all open spaces.

Primrose (*Primula vulgaris – see Photo 7 below)* and lesser celandine (*Ranunculus ficaria)* have also been spotted. Bluebells (*Hyacinthoides non-scripta)* is growing in some slopes adjacent to the verges of the route. Crocuses were planted by Amey and the Hawick Rotary Club on Galalaw Roundabout, to the north of Hawick.

Photo 7 - Primula vulgaris growing on the grass verge on the A7

Photo 8 – Daffodils growing on the grass verge on the A7

Invasive Species

Rosebay willow herb is the main invasive species found along this route, growing in numerous large patches of high density, but with low infestation toward adjacent land. Common ragwort has also been recorded in lower numbers.

The route tour in 2018 identified Japanese knotweed within the verge area southbound, south of Selkirk Golf Club (see photo 9)

Photo 9 – Japanese knotweed located within grass verge on the A7

The identified Japanese knotweed has been included in the control programme for invasive species and the success and level of control will be assessed during the route tour identified for 2019.

The weed hotspots database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrub Areas

Ornamental shrub areas are few, and only exist on the border between Scotland and England. Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting.

Hedges, Trees and Woodland

There are 8185m of hedgerows adjacent to the A7, forming part of the highway boundary.

Many mature trees are being lost due to age, Dutch elm disease and stresses related to being close to the road. Works to utilities are also causing damage to trees.

Four additional landowner dangerous trees were identified and subsequent land searches undertaken with a view to requesting the removal of the identified trees by the appropriate landowner.

The Statutory Plant Health Notice (SPHN) on positive *Phytophthora ramorum* on larch issued in October 2017 for the woodland areas on the M8 Junction3, highlights the need to closely monitor any woodland areas within the Unit that contain larch trees, as well as any possible new areas of *Rhododendron ponticum*, which acts as a host plant for the pathogen.

There is a Pre-2017 spent SPHN for positive *Phytophthora ramorum* on Larch in a woodland area to the west of Galashiels, approximately 5km from the route.

Wetlands, Balancing Ponds and the Water Environment

The wetlands along this route include all the burns and open ditches crossing or running alongside the road, and two SuDS ponds within the trunk road boundary at Auchienrivock.

There have been no activities related to the water environment and landscape in the 2018 to 2019 reporting season.

Biodiversity

The road corridor contains a wide range of habitats, including those associated with watercourses, and the biodiversity value should be high.

There is one recorded outlier badger sett on the A7 at Branxholm beside the River Teviot.

There are areas along the route where biodiversity has previously been improved, like Galalaw roundabout, where in partnership with Hawick Rotary Club, Amey planted 5000 crocus bulbs for the "Purple for Polio" campaign.

On the A7 there are conservation areas within Canonbie, Hawick, Selkirk, Galashiels and Langholm.

The following nature conservation designated areas are within 2km of the A7:

- Faldonside Loch SSI (Site Code 623), south of Galashiels, which has been designated for its standing open water and canals habitat (base-rich loch).
- River Tweed SSSI (Site Code 1366), which has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*), otter (*Lutra lutra*), other invertebrates (beetle and fly assemblage), its rivers and streams habitat (trophic range river/stream) and its vascular plant assemblage.
- Dunhog Moss SSSI (Site Code 569), which has been designated for its fen, marsh and swamp (wetland) habitat (basin fen) and its other invertebrates (beetle fly assemblage).
- Whitmuirhall Loch SSSI (Site Code 1638), which has been designated for its fen, marsh and swamp (wetland) habitats (basin fen and hydromorphological mire range).
- Selkirk Racecourse SSSI (Site Code 1416), which has been designated for its fen, marsh and swamp (wetland) habitat (basin fen) and its vascular plant assemblage.
- Ashkirk Loch SSSI (Site Code 94), which has been designated for its fen, marsh and swamp (wetland) habitat (basin fen – Schwingmoor type).
- Long Moss – Drinkstone Hill SSSI (Site Code 1366), which has been designated for its fen, marsh and swamp (wetland) habitat (valley fen) and its lowland acid grassland habitat.
- River Tweed is also a SAC (Site Code 8369) which has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*) along with its 'rivers with floating vegetation often dominated by water-crowfoot' habitat.
- Whitlaw Bank to Hardies Hill SSSI (Site Code 1635), which has been designated for its Butterflies (small blue (*Cupido minimus*)), lowland neutral grassland and its other invertebrates (soldierfly (*Oxycera dives*)).
- Slaidhills Moss SSSI (Site Code 8164), which has been designated for its bryophyte assemblage.

- Lynnwood - Whitlaw Wood, Slitrig SSSI (Site Code 1117), which has been designated for its broad-leaved, mixed and yew woodland habitat (upland mixed ash woodland).
- Allan Water, Hillhead SSSI (Site Code 34), which has been designated for its lowland calcareous grassland.
- Borders Woods SAC (Site Code 8211) which has been designated for its broad-leaved, mixed and yew woodland habitat (mixed woodland on base-rich soils associated with rocky slopes).
- Faldonside Loch SSSI (Site Code 623)
- Whitlaw and Branxholme SAC (Site Code 8408) which has been designated for its bryophytes (slender green feather-moss (*Drepanocladus* (*hamatocaulis*) *vernicosus*)), its fen, marsh and swamp (upland) (very wet mires often identified by an unstable 'quaking' surface) and its fen, marsh and swamp (wetland) (base-rich fens).
- River Esk, Glencartholm SSI (Site Code 1360)
- Newcastleton Hills SSI (Site Code 906).

2.2.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A7	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Gorse developing in some of the grass areas
A7	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of	Scottish Borders Council are sub-contracted to cut areas at Ashkirk

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
			between 50 - 60mm has been carried out	under medium frequency cut
A7	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	Scottish Borders Council are sub-contracted by Amey to cut areas at Hawick, Selkirk and Ashkirk under high frequency cut
A7	Weed Spraying	29/05/2018 21/08/2018	This has been effective and in accordance with the contract.	New confirmed area of Japanese Knotweed has been programmed for spraying in 2018
A7	Shrub Bed Weed Maintenance	Four times per year during growing season	Shrub bed maintenance is not effective, most shrub areas are in a poor condition and perennial weed growth is common. Hand weeding is a temporary solution, and new landscape proposals are required for most of these areas. Shrub bed maintenance at Dovemount Roundabout is proving difficult due to the access issues for operatives at the roundabout.	A new landscape design for Dovemount roundabout is being undertaken in 2019/20. This will reduce maintenance requirements and the associated risks to operatives

2.2.3 *Unforeseen Issues and Limitations*

Unforeseen issues or limitations are discussed in Chapter 7.

2.2.4 *Landscape Development Plan (LDP) and Landscape Strategy Operations*

During 2018/19 no additional LDP or Landscape Strategy schemes were prioritised within the available budget for the A7 route. High priority woodland management schemes identified were undertaken in 2017/18 at Canonbie, Teviothead, Martinhouse Bridge to Parkdail, Hollows to Auchenrivock and Canonbie bypass to a total construction value of £126,384.

There are currently 2 schemes within the LDP and Landscape Strategy. The Dovemount Roundabout scheme is planned to be completed within the 2019/20 landscape budget and the lowest priority scheme for specimen tree planting will be considered in future budgets.

Schemes that have been completed

No additional schemes were prioritised within the 2018/19 available budget.

2.2.5 *Specific Opportunities for Improvement*

There was an opportunity to carry out some enhancement planting in the central part of Northbridge Roundabout in Hawick as highlighted in the 2016 Grassland Report. Through consultation with Hawick Community Council it became evident that there was a desire to have a location for erecting a Christmas tree during the festive season and therefore a revised landscape design was undertaken for the roundabout incorporating provision for a Christmas tree. Proposed hard and soft landscape features will provide interest throughout the year and will reduce maintenance commitments, be sustainable and reduce landscape maintenance operative risk. Additional tree and bulb planting have also been designed for the approaches to the Roundabout with structural planting improvements for existing overgrown vegetation south of the roundabout between Commercial Road and Mart Street.

The implementation of the above design has been identified as a scheme for financial year 2019/20.

Route tours have also identified the need to undertake woodland management, including crown lifting and thinning to promote natural regeneration, biodiversity and promote healthy growth in to areas on the A7 being south of Ashkirk to north of Selkirk and between

Langholm and Auchenrivock. It is proposed that both these identified areas of work will be included into scheme bids for consideration.

On steep embankment areas where a reduction of grass cutting is proposed to enhance biodiversity, create clearings for deer and to reduce operator risk. Natural regeneration will be encouraged out with sight lines. These will be in locations where changes in maintenance will complement the surrounding landscapes in accordance with the principles of the Fitting Landscapes policy document.

Identified Woodland Management Schemes

- A7 South of Ashkirk to North of Selkirk –Woodland management is proposed to address unhealthy tree mix specimens, promote natural regeneration encouraging biodiversity address future visibility issues and ease access for grassland maintenance and aid accessibility for litter collection.
- A7 Langholm to Auchenrivock (N/B & S/B) Woodland Management – Woodland management has been identified for vegetation adjacent to the highway through the 2018 route tours which will address unhealthy trees and promote biodiversity and aid access for maintenance operations.

2.3 Route A68

2.3.1 General Condition of the Landscape Areas

The condition of the landscape within the A68 route is generally acceptable although verges are susceptible to damage from haulage vehicle overrunning resulting in rutting is present in various locations with areas devoid of grass sward. Giant hogweed and Japanese knotweed which has been and will continue to be prioritised for control. There are significant infestations of rosebay willow herb out with areas of mature woodland mixes which are well established throughout the network.

Engagement with local communities have been prioritised resulting in support given to community lead initiatives to improve streetscapes and two schemes to be undertaken by Amey in financial year 2019 /20 in Lauder and Pathhead Main Streets, promoting civic pride, sense of ownership and increased biodiversity.

The following sections describe the current conditions of the landscape surrounding the A68 within the 2018 to 2019 reporting period.

Grassed Areas

Further information can be found in the Grassland Report which can be found within Appendix E.

The verges of this route are maintained under cyclic routine operations and in accordance with appendix 30/7 Grass, Bulbs and Wildflower Maintenance.

Most of the grassland areas along this route are general grassed verges that are under a low maintenance of 3 cuts per year. The condition of these areas varies along the route, but issues like erosion and the presence of weeds are common. They are often partly encroached by gorse and bramble, different herbaceous plants and invasive species. In some areas of the route (the closest stretch to the Border) reeds are also growing in these areas.

The over run of the verges by HGV's is one of the key issues for the grasslands of this road, especially in laybys but also in close bends.

The sward health along this route varies as the landscape changes, but in general it is found to be medium to poor. The low and narrow verges suffer from road splashes, erosion and over run, so there are some stretches were the ground is bare or the grass intermingles with large numbers of weeds. The swathe growing on steep embankments is

also suffering erosion as the soil is wind-blown and is quite often encroached by gorse and brambles.

Bulbs and Wildflowers

There are 964m2 of daffodil bulbs within grassed areas along this route and therefore the timing of the first grass cut is programmed accordingly. 78.5m2 of daffodil Narcissus species bulbs grow in shrub areas.

In addition to that, there are 210.5m2 of snowdrops bulbs on the verges of the route and a small area of Chionodoxa by Hope Cottages, to the south of Pathhead. Three new areas of lupins were identified in 2018 in addition to one area of common foxglove and two areas of red campion.

Primulas are present on the verges to the north of Bonjedward, and IRIS records an area of wildflowers on the verge along the northbound carriageway to the south of Lauder, by St Leonards Farm.

Invasive Species

Rosebay willow herb is the main invasive species found along this route, growing in numerous large patches of high density, but with low infestation towards adjacent land. Common ragwort has also been recorded in lower numbers.

Two new areas of high infestation of giant hogweed were recorded in 2017 and therefore a spraying programme was implemented in 2018 although an element of regrowth was identified later in the growing season. The route tour for the A68 in 2019 will assess the success of the previous control management and establish further control measures if required for 2019/20. The route tour in 2018 recorded the presence of giant hogweed adjacent to the River Esk (see Photo 10). One new area of Japanese knotweed has been identified on this route.

The weed hotspots database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Photo 10 - New area of giant hogweed on the A68 adjacent to the River Esk

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous wildlife inspection.

Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting. Amey will engage with the local community to enhance the shrub beds where they are located within or next to town centres. Consultation with community groups has taken place at Pathhead, Lauder and Carfraemill Roundabout resulting in landscape improvement scheme designs being undertaken which have been designed to enhance the local environment and promote civic pride.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation are being identified during routine inspections, in order to keep them in a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will continue to be identified during these inspections. Amey continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. During 2018/19 three additional landowners were identified with the view to them addressing identified dangerous trees adjacent to the road network.

Woodland management operations are required despite of the recent budget restraints.

There is a 2017 Statutory Plant Health Notices for positive *Phytophthora ramorum* on Larch to the east of Camptown, which lies nearby, but outwith the highway boundary.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

The road corridor contains a wide range of habitats, including those associated with watercourses, and the biodiversity value should be high.

There is one recorded entry for a Pipistrelle bat roost at Lothian Bridge, Scottish Borders. This was discovered prior to repointing works being undertaken on the bridge.

Recorded data for a potential otter resting place was highlighted for the A68 close to the B6357 Junction, Scottish Borders. The potential resting place was located where the Black Burn joins the River Tweed on the west bank.

A community planting day was organised in the village of Pathhead on the A68. This included the addition of summer bedding, herbaceous planting and bulb planting to enhance the local community and improve biodiversity. New shrub planting is also planned for the village within the 2019/20 landscape budget.

On the A68 there are conservation areas at Dalkeith, Pathhead and Ford, Edgehead, Dewartown, Fala, Fala Dam, Lauder, Redpath, Newstead, Dryburgh, St Boswells, Ancrum, Nisbet and Jedburgh.

The following nature conservation designated areas are within 2km of the A68:

- Border Mires, Kielder-Butterburn SAC (Site Code 8369) designated for its blanket bog, transition mires and quaking bogs, northern atlantic wet heaths with *erica tetralix*, european dry heaths and petrifying springs with tufa formation (*cratoneurion*).
- Kielderhead Moors: Carter Fell to Peel Fell Site of Special Scientific Interest (Site Code 840) has been designated for its breeding bird assemblage, its bogs (upland) (blanket bog) and its dwarf shrub heath (upland) (subalpine dry heath).

- SSSI – Jedwater Woodlands SSSI (Site Code 822) has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland) and its other invertebrates (beetle assemblage).
- Woodhead Moss SSSI (Site Code 1648), has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland) and its fen, marsh and swamp (wetland) (basin fen).
- River Tweed Site of Special Scientific Interest (Site Code 1366).
- Keith Water SSSI (Site Code 828) which has been designated for its quaternary geology and geomorphology.
- Fala Flow SSSI (Site Code 622) which has been designated for its populations of pink-footed goose (*Anser brachyrhynchus*), non-breeding and its upland bog habitat (blanket bog).
- The Fala Flow SPA (Site Code 8497) has been designated for its populations of pink-footed goose, non-breeding.
- The Fala Flow SPA (Site Code 8423) has been designated for its populations of pink-footed goose, non-breeding.
- Airhouse Wood SSSI (Site Code 27) which has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland).
- SAC – River Tweed SAC (Site Code 8369) has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*) along with its 'rivers with floating vegetation often dominated by water-crowfoot' habitat.
- Gattonside Moss SSSI (Site Code 682) has been designated for its fen, marsh and swamp (wetland) (basin fen) and its other invertebrates (beetle assemblage).
- Tweedwood – Gateheugh SSSI (Site Code 1574) has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland) and its other invertebrates (beetle assemblage).
- Newtown St Boswells Woods SSSI (Site Code 8211) has been designated for its broad-leaved, mixed and yew woodland (upland mixed ash woodland).

- Borders Woods (Site Code 8211) designated for its broad-leaved, mixed and yew woodland (mixed woodland on base-rich soils associated with rocky slopes).
- Jedwater Woodlands SSSI (Site Code 822) has been designated for its broad-leaved, mixed and yew woodland (upland oak woodland) and its other invertebrates (beetle assemblage).

2.3.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A68	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Gorse developing in some of the grass areas
A68	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	Over run on the grass verges by HGV's is common on this route, especially around laybys
A68	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	Scottish Borders Council are sub-contracted by Amey to cut areas at Lauder, Earlston, St Boswells and Jedburgh under high frequency grass cutting

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A68	Weed Spraying	31/05/2018 23/08/2018	This has been effective and in accordance with the contract. Some regrowth of previously sprayed Giant Hogweed was noted in 2018 route tours. This will be programmed for spraying in 2019	New confirmed area of Japanese knotweed was identified in 2018 and will be programmed for spraying
A68	Shrub Bed Weed Maintenance	Four times per year during growing season	Shrub bed maintenance is not effective, most shrub areas are in a poor condition and perennial weed growth is common. Hand weeding is a temporary solution, and new landscape proposals are required for most of these shrub areas.	New shrub planting is being proposed for Pathhead, Lauder and Carfraemill Roundabout during 2019/20

2.3.3 Unforeseen Issues and Limitations

Adjacent landowner vegetation gives cause for concern regarding dead trees and encroaching vegetation. Inspections on the network identifying and monitoring trees is on-going, collating up to date information in relation to 'dangerous trees' within the network uploaded into IRIS. Further dangerous trees are being identified throughout the network through the route inspections and site inspections.

Adjacent landowner hazardous trees are continually being added to the dangerous tree register, in total 30 dangerous trees have so far been identified during route tours for

financial year 2018/19. Further trees will be identified through the route tours programmed. Several identified adjacent landowner dangerous trees have been removed.

Other, more general unforeseen issues or limitations are discussed in Chapter 7.

2.3.4 Landscape Development Plan and Landscape Strategy Operations

During previous financial 2017/18 annual bedding planting was undertaken within Pathhead village in partnership with Pathhead Community Gardeners. As a consequence of potential pedestrian improvement investigations, the proposed shrub bed scheme originally programmed was delayed until financial year 2019/20. In addition, investigations were also undertaken to allow scheme construction bids to be prepared for 2019/20 at Carfraemill Roundabout and the High Street within Lauder on the A68. The 2019/20 landscape budget will include 5 schemes within the LDP, which will leave 1 low priority scheme to be completed in future budgets.

Specific Opportunities for Improvement

There are some visibility issues at Carfraemill Roundabout, where the *Prunus lusitanica* (Portuguese laurel) hedge in the centre is overgrown. Due to the mature nature of the vegetation a decision was taken to redesign the landscaping on the roundabout, reducing the maintenance commitments whilst increasing colour and biodiversity. The proposed scheme addresses the existing vegetation replacing it with a bulb planting and central specimen tree planting creating improved sightlines whilst providing colour and interest throughout the year. The existing lime tree avenues approaching the roundabout from a number of directions will also be addressed removing epicormic growth and improving crown structures.

As a result of consultation with Lauder Community Council landscaping proposals have been developed to enhance the grass verges and address existing overgrown shrub beds within Lauder. This has been designed to reduce the grass maintenance commitments whilst enhancing biodiversity through wildflower provision and creating horticultural interest throughout the year.

A scheme has been prepared for approval to redevelop existing planting beds throughout the Main Street in Pathhead. This will complement the beds currently and proposed to be redeveloped and managed by Pathhead Community Gardeners.

There are some measures that would enhance biodiversity within the roadside verges and reduce the maintenance. For example, the timing for the grass cutting reducing the number of cuttings.

Identified Woodland Management Schemes

- A68 Lauder to Newton & St. Bosewell's (N/B & S/B) –Woodland management is proposed to address unhealthy tree mix specimens, promote natural regeneration encouraging biodiversity address future visibility issues and ease access for grassland maintenance and aid accessibility for litter collection.

2.4 Route A702

2.4.1 General Condition of the Landscape Areas

The route generally contains only a narrow strip of landscaping with little scope for the presence of woodland and significant landscape features out with existing verges, boundary hedges and mature trees forming a boundary to adjacent landowners through predominately a rural environment. There is a significant quantity of mature trees within adjacent landowner's areas but directly adjacent to the network and within close proximity of the road which characterises the route. There are a number of dead mature trees identified during route tours with adjacent landowners identified as required to removing any potential hazards to the road users and those who maintain them. Ongoing maintenance is also required for the existing boundary hedgerows to encourage healthy growth and biodiversity. There is an opportunity to improve verges throughout the route due to salt spray damage and encourage civic pride within the rural settlement and the larger town of Biggar which is identified as a tourist destination.

The following sections describe the current conditions of the landscape surrounding the A702 within the 2018 to 2019 reporting period.

Grassed Areas

There is an area of high amenity grass in the village of Carlops. Apart from the exceptional areas of high amenity, most of the grasslands along this route are maintained on a low frequency regime. Rosebay willow herb grows frequently in these areas, and in damper areas reeds can also be found.

The verges of this road are very narrow, and the sward is in a generally poor state of health. This appears to be due salt spreading, over run by vehicles and shade from the trees or poor soil. As a result, there are large patches of bare ground. The sward presents a better state of health where the verges run along farm fields, there are many weeds growing, like rosebay willow herb or docks.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There are 6942m2 of daffodil bulbs growing on grass areas on the verges of the route.

There are also records of a total of 26m2 of snowdrops bulbs along the verges of the road, and of an area of 110m2 of lesser celandine along the southbound carriageway to the south of Lamington. The 2018 route tours identified eight new areas of comfrey, one area of Spanish bluebell and one bachelor's button.

There are crocuses growing on the most northerly roundabout next to the A720; these were planted by Braids Rotary Club as part of their Purple4Polio campaign.

Invasive Species

The main weed along the grasslands of this route is rosebay willow herb, followed by docks that grow in several areas There are some small patches of other invasive species like common ragwort, Japanese knotweed or giant hogweed. Prioritisation treatment of ragwort adjacent to grazing areas, giant hogweed near the public and Japanese knotweed near areas of disturbance will be considered.

The weed hotspots database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas are being controlled and removed where necessary always with a previous inspection of the wildlife.

Ornamental shrub areas exist at the roundabout to the north of West Linton and Abington Roundabouts and Biggar. Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting which would reduce maintenance, improve biodiversity and the character of the route. Amey will engage with the local community to enhance the shrub beds where they are located within or next to town centres.

Hedges, Trees and Woodland

Many mature trees are being lost due to age, Dutch elm disease and stresses related to being close to the road. Works to utilities are also causing damage to trees. Hedges, trees and other encroaching vegetation continue to be identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will continue to be identified during these inspections. Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. Adjacent landowner hazardous trees are continually being added to the dangerous tree register. Further trees

will be identified through the route tours programmed. During 2018/19 seven additional adjacent landowner dangerous trees were identified with land searches undertaken with the view to requesting adjacent landowners to remove the identified network hazards. Overall 16 adjacent landowner dangerous trees have been identified for attention on this route.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuD's ponds within the trunk road boundary.

Biodiversity

Narrow verges and proximity to traffic, salt spray etc. limit the quality of habitat and hence biodiversity.

There are conservation areas at Swanston, Morton Mains, West Linton, Biggar, Coulter, Lamington. Gardens and designated landscapes can be found at Newhall, Penicuick and Carlops.

The following nature conservation designated areas are within 2km of the A702:

- North Esk Valley SSSI (Site Code 1233) designated for its acid grassland (lowland acid grassland), its fen, marsh and swamp (wetland) (valley fen), its palaeontology arthropoda (excluding insects and trilobites) and its stratigraphy (llandovery)
- Carlops Meltwater Channels SSSI (Site Code 10400) designated for its quaternary geology and geomorphology (quaternary of Scotland)
- Bilston Burn SSSI (Site Code 204) designated for its broad-leaved, mixed and yew woodland (upland mixed ash woodland) and its stratigraphy (Lower Carboniferous [dinantian - namurian (part)])
- Dolphinton - West Linton Fens and Grassland SSSI (Site Code 532) designated for its bryophytes assemblage, its calcareous grassland (lowland calcareous grassland) and its fen, marsh and swamp (wetland) (valley fen).

- River Tweed SAC (Site Code 8369) which has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*) along with its 'rivers with floating vegetation often dominated by water-crowfoot' habitat.
- West Linton Fens and Grassland SSSI (Site Code 532).

2.4.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A702	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Gorse developing in some of the grass areas
A702	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
A702	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	Scottish Borders Council are sub-contracted by Amey to cut areas at Carlops under high frequency grass cutting
A702	Weed Spraying	01/06/2018 24/08/2018	This has been effective and in accordance with the contract.	No further information

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A702	Shrub Bed Weed Maintenance	Four times per year during growing season	Shrub bed maintenance is not effective, most shrub areas are in a poor condition and perennial weed growth is common. Hand weeding is a temporary solution, and new landscape proposals are required for most of the existing shrub areas.	New shrub planting is being proposed for the two roundabouts near Abington Service Station

2.4.3 Unforeseen Issues and Limitations

Unforeseen issues or limitations are discussed in Chapter 7.

2.4.4 Landscape Development Plan and Landscape Strategy Operations

During 2018/19 no additional LDP or Landscape Strategy schemes were prioritised within the available budget for the A702 route. There are currently 4 schemes identified within the LDP, but none are included in the 2019/20 budget.

2.4.5 Specific Opportunities for Improvement

The redevelopment the landscaping at Abington Roundabout has been included in the Landscape Schedule of Opportunities although this is not currently included in the priority programme for 2019/20 but will be considered if further additional monies become available later in the financial year.

Within possible scheme designs alternative grass mixes to address bare areas of ground to deter weed encroachment and visual issues associated with erosion and overrun will be proposed.

Where access to areas of ground out with visibility splays and immediate verges raises concerns in regard to operator risks, consideration will be given to extending areas of non-maintenance of grasslands to encourage natural regeneration and grassland biodiversity.

2.5 Route A720

2.5.1 General Condition of the Landscape Areas

The network contains additional grasslands beyond the regularly maintained verges and visibility splays offering environments where wildflower can thrive if the bramble and scrub encroachment is controlled. Grass sward is of low quality throughout the route with erosion present on steep slopes and weeds prevalent. Wildflowers are encouraged with significant areas of cowslip present. Giant hogweed has established in significant quantities and requires attention particularly at Hermiston Gait where it appears within grass verges.

Structural woodland areas throughout the route requires management to address poor growth and unhealthy material providing the opportunity to create glades and open areas to encourage natural regeneration and understory material. There is an opportunity to increase biodiversity and encourage species diversity.

There are a number of junctions requiring vegetation management including roundabouts providing the opportunity to improve biodiversity, horticultural interest and sustainability whilst reducing hazards and risks associated with maintenance requirements. Areas of existing woodland have been previously coppiced to address sightlines associated with CCTV cameras have now regenerated and will require attention in the medium term. Weed infestation at these locations also requires attention.

The following sections describe the current conditions of the landscape surrounding the A720 within the 2018/19 reporting period.

Grassed Areas

All the maintained grassed areas along this route fall within the general grassland. Cowslips can be found growing in these areas and brambles and scrub are common. The management of brambles to benefit cowslips and wildflowers will be incorporated into any proposed cutting back works for this unit. Within the grass areas lupins have established (see photo 11)

Photo 11 – Lupins established within open grassland areas

The grassed areas along this route present a poor to medium state of health, erosion is a problem on the steep embankments, under barriers and along filter drains and kerbs that have been treated with pesticide where the ground is now bare.

In general, the grass is quite sparse, and the growth is weak, quite often yellowing.

There are large patches of bare ground that leave room for other species to grow, like weeds or moss in the shadiest areas.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There is a large area of cowslips within the rough grass on the east bound approach to Dreghorn Junction. The current grassland management regime is being reviewed with a view to encouraging additional species to enhance biodiversity.

Invasive Species

Giant hogweed covers large areas along this route (see photo 12 below), especially at Hermiston Gait Roundabout, and also between Gilmerton Junction and Sheriffhall Roundabout. Rosebay willow herb and common ragwort grow all along the road. Japanese

knotweed is less common but also present. These weeds are currently under treatment regime with information recorded in the weed hotspot database.

Photo 12 – Giant hogweed within grass verge

Scrub and Shrubs Areas

There are several points along the route where trees, hedges or scrub encroach onto the grassland. Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife.

Cyclic maintenance operations are carried out 4 times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting and where possible. Amey engages with the local community to enhance the shrub beds where they are located within or next to town centres.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation continue to be identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land are identified during these inspections. Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. A scheme has been prepared for financial year 2019/20 to address overgrown structural woodland mixes

directly adjacent to the grass verges between Straiton Junction and Sheriffhall Junction. The proposals include all slip roads within this network section.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

Improving grassland where degraded and infested with injurious weeds is required. Opportunities to increase biodiversity and create sustainability with economic benefits by recognising opportunities to carry out our A to Bee Initiative, increasing the plant pollinators and positive visual amenity within the road networks. Also, to establish ways in which we can improve the safe working conditions for operational staff maintaining the landscape within the road networks through appropriate design. The required vegetation management along the route allows the opportunity for exploring innovative ideas for harnessing the biogas potential from the organic material.

There are numerous conservation areas and gardens and designed landscapes in the surrounding settlements and landscape adjacent to the A720.

The following nature conservation designated areas are within 2km of the A720:

- Wester Craiglockhart Hill SSSI (Site No: 1615) designated for its rare unimproved grassland and associated plant species.
- Dalkeith Oakwood SSSI (Site No: 487) designated for its ancient relict oak woodland, grazed and associated fauna and lichen flora.
- Bilston Burn SSSI (Site No: 204) designated for its geological exposures and ancient woodland.

2.5.2 *Effectiveness of Maintenance Operations and Consented Changes*

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A720	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Brambles and lupins are developing in some of the grass areas. Woodland vegetation is starting to encroach on maintained grass areas. Amey are proposing to carry out woodland management at these areas in 2019/20
A720	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
A720	Weed Spraying	01/06/2018 24/08/2018	This has been effective and in accordance with the contract.	No further information

2.5.3 *Unforeseen Issues and Limitations*

Fast growing tree species within this route are now causing problems for Traffic Scotland cameras. Proposals for remedial work have been carried out for a number of routes.

Other, more general unforeseen issues or limitations are discussed in Chapter 7.

2.5.4 Landscape Development Plan and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.5 below. There are 3 schemes remaining within the LDP and Landscape Strategy. The Gilmerton to Straiton woodland management scheme is due for completion within the 2019/20 landscape budget. The remaining 2 schemes have the lowest priority rating and will be considered for future budgets.

Table 2.5: Schemes that have been completed

To compliment woodland management schemes undertaken in 2017/18 the following were undertaken in 2018/19.

Route	A720 Baberton Mains Woodland Management	
Scheme Name	17SE0313003	
Location	Sheet 2	Baberton Mains
Synopsis	Woodland management between network and residential properties	
Reasons for selection	Public enquiries and route tour visits	
Cost estimate	I £5,497.81 C £38,082.20	
Priority rating	1	
State of Development	Completed	
Effectiveness	Encroaching vegetation on neighbouring properties has been removed including windblown trees promoting safe environments for pedestrians and residents with clear sight lines established	

Route	A720	
Scheme Name	18SE0313019	
Location	Sheet 3	Torphin Bank to Bonaly Rise
Synopsis	Woodland management between network and residential properties	
Reasons for selection	Public enquiries and route tour visits	
Cost estimate	I N/A C £32,161.69	
Priority rating	1	
State of Development	Completed	

Effectiveness	Encroaching vegetation on neighbouring properties has been removed including windblown trees.

2.5.5 Specific Opportunities for Development

There is an opportunity to carry out an enhancement planting at Hermiston Gait Junction, where the introduction of wildflowers would reduce the need for maintenance as well as encourage biodiversity. This could be undertaken once giant hogweed is eradicated from this junction.

As indicated the route tours highlighted the requirement to undertake woodland management of existing mature tree structure mix planting between Sheriffhall Roundabout and Straiton Junction. Close liaison is required with SP Energy Networks due to the proximity of overhead power lines where vegetation management is required. The proposed works will address woodland thinning requirements and encourage healthy woodland development and where densities are reduced promote natural regeneration, habitat creation and biodiversity. Sightlines will be enhanced, and access improved for contractual maintenance activities.

Obscured road signs will be identified through the proposed 2019 route tours to enable the proposal of woodland management schemes to address vegetation encroachment. This will provide the opportunity to design clearance areas creating open areas to promote natural regeneration of grassland encouraging grassland and wildflower diversity. In addition, woodland clearance will ease access for maintenance activities such as litter collection and grass cutting.

2.6 Route A876

2.6.1 General Condition of the Landscape Areas

The grass quality with the landscape provision on this route is poor with grasslands failing in close proximity to the Forth with erosion present. There is no evidence of wildflower or bulb planting within the route and therefore there is an opportunity to improve the biodiversity and habitat along the routes but also within the roundabouts. Proposals to improve the roundabouts will consider landscape enhancement and visibility issues associated with the mature vegetation currently present. The route previously contained two identified outbreaks of Phytophthora ramorum affecting the health of larch trees and therefore the health of all remaining larch trees on this route are being closely monitored. A tree replacement programme may be appropriate to consider depending on available resources.

The following sections describe the current conditions of the landscape surrounding the A876 within the 2018 to 2019 reporting period.

Grassed Areas

All the maintained grassland areas on this route fall within this general grassland category.

The sward on these verges presents a poor state of health in the areas closest to the Forth, the grass is very sparse and there are many signs of erosion. It is proposed that soil should be over seeding with a coastal verge mix may be appropriate depending on soil analysis. Grass sward becomes a bit thicker as the road goes inland, but it is still intermingled with herbaceous plants and small weeds.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There are no areas of bulbs or wildflower recorded for this route. Consideration will be given to introducing of wildflower and bulbs where appropriate linking to the Amey A to Bee initiative.

Invasive Species

Spreading thistle is the main weed along the grasslands of this route, growing together in some points with broad leafed dock, common ragwort and rosebay willow herb.

The weed hotspots database will be used as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife. No shrub areas exist within the route however it is our intention to develop low maintenance shrub planting and improve the visual amenity of the route.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation should be identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. Woodland management operations are required despite of the recent budget restraints.

There are two Pre-2017 active SPHNs for Positive *Phytophthora ramorum* on Larch to the north of Kincardine. This will be considered for any landscape site inspections during the summer months. Any signs of infection such as discolorations on larch trees along the route will be reported to Forestry Commission Scotland.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

There is a great deal of information available relating to the Firth of Forth which needs to be assessed with reference to the road corridor.

The following nature conservation designated areas are within 2km of the A876:

- The Firth of Forth Site of Special Scientific Interest (SSSI) (Site No: 8163) has been designated for 40 species of birds, butterflies, fen, marsh and swamp (wetland), geomorphology, igneous petrology, inshore sublittoral sediment (marine), littoral sediment (coast), littoral sediment (marine), mineralogy, neutral grassland, other invertebrates, palaeontology, quaternary geology and geomorphology, stratigraphy (upper and lower carboniferous), supralittoral rock (coast), supralittoral sediment (coast) and vascular plants.
- The Firth of Forth SPA (Site Code 8424) which has been designated for 28 species of birds.
- The Firth of Forth Ramsar (Site Code 8499) site which has been designated for 10 species of birds.

2.6.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A876	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Gorse developing in some of the grass areas
A876	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
A876	Weed Spraying	24/05/2018 25/05/2018 16/08/2018 17/08/2018	This has been effective and in accordance with the contract.	No further information

2.6.3 Unforeseen Issues and Limitations

Unforeseen issues or limitations are discussed in Chapter 7.

2.6.4 Landscape Development Plan and Landscape Strategy Operations

During 2018/19 no additional LDP or Landscape Strategy schemes were prioritised within the available budget for the A876 route. There are currently 2 schemes identified within the LDP but none of these are included in the 2019/20 landscape budget.

2.6.5 Specific Opportunities for Improvement

Opportunity to introduce wild flowers in some roundabouts, reduce the maintenance works and enhance biodiversity were previously identified if budgets allow for expanding the scope of potential schemes out with those currently identified as priority 1 and 2 within the agreed schedule of landscape opportunities. If further funding is made available consideration could be given to:

- Kilbagie Roundabout

By introducing the semi-parasite yellow rattle (*Rhinanthus minor*), the need for grass cutting would decrease, and it would also favour the growth of native species. Assessments will be made into the suitability of locations along this route including roundabouts, embankments and junction areas bearing in mind opportunities may be restricted due to the requirement to remove arisings. Yellow rattle may not be appropriate near intensive grazing land. Grassland management will need to reflect the requirement for grassland of low to medium fertility and cut 40-50mm before sowing in autumn. Further grass cutting should not then occur between April and mid-July.

2.7 Route A6091

2.7.1 General Condition of the Landscape Areas

The condition of the landscape infrastructure is generally acceptable with woodland management required for the native woodland now well established and mature on this route. Grass land is good with the route containing the well-known 'Golden Mile' daffodil planting. Scrub encroachment requires to be managed throughout the route to create and retain rougher grassed areas where bulbs and wildflowers can be encouraged and thrive.

The two roundabouts Tweedbank and Melrose can be enhanced creating attractive focal points increasing biodiversity and interest. Through careful design the current maintenance obligations can be reduced in accordance with the principles of 'Fitting Landscapes'

The following sections describe the current conditions of the landscape surrounding the A6091 within the 2018 to 2019 reporting period.

Grassed Areas

There is a variety of cutting regimes for the grass areas which range from high amenity grassland at Kingsknowe Roundabout to low maintenance for rough grassland. The sward health along this route can be defined as good as grass grows in large clumps that cover the ground in quite a uniform way. Weeds and herbaceous plants of different kind intermingle over the grassland area and there is some litter on the verges. There are some signs of salt splashing and erosion on the edges.

There are some signs of vehicle damage on the verges of this route, mostly on leaving Ravenswood Roundabout.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There is one area where the grassed verges are wider and include a pedestrian walkway. This is locally known as "the Golden Mile" because of the daffodil bulbs growing alongside.

Invasive Species

The main issues along the verges of this road are the large incidences of rosebay willow herb.

The weed hotspots database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas will continue to be controlled and removed where necessary always with a previous inspection of the wildlife.

Ornamental shrub areas are few, and only exist on the Abbotsford (Melrose) Roundabout and in Melrose town centre. Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting. The roundabout at Tweedbank has no planting within the roundabout and would benefit from shrub planting to improve the visual amenity and character of the route.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation are identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land are also identified during these inspections.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. Further dangerous trees are being identified throughout the network by the route inspections and site inspections.

Adjacent landowner hazardous trees are continually being added to the dangerous tree register and further trees will be identified through the route tours programmed.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

There are 30,620m2 of daffodils bulbs growing on the verges of the route. This gives a distinctive character to the route, which is locally known as the Golden Mile due to the abundance of daffodils. Some of these bulb areas are being overtaken with scrub vegetation. A scheme will be carried out in 2019/20 to tackle the scrub vegetation and enhance the biodiversity along the route.

Proposed woodland maintenance in 2019/20 will encourage healthy tree growth, remove weak species, promote natural regeneration and species diversity.

The two roundabouts Tweedbank and Melrose could be enhanced creating attractive focal points increasing biodiversity and interest.

The following nature conservation designated areas are within 2km of the A6091:

- River Tweed SSSI (Site Code 1366), which has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon Marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*), otter (*Lutra lutra*), other invertebrates (beetle and fly assemblage), its rivers and streams habitat (trophic range river/stream) and its vascular plant assemblage.
- Newtown St Boswells Woods SSSI (Site Code 1223) which has been designated for its ancient woodland and associated flora.
- Tweedwood Gateheugh (Site Code 1574) which has been designated for its ancient woodland and associated flora and fauna, in particular for its high entomological interest
- Faldonside Loch (Site Code 623) which has been designated for its eutrophic loch and aquatic species.
- River Tweed SAC (Site Code 8369) which has been designated for its populations of river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), atlantic salmon (*Salmo salar*) and otter (*Lutra lutra*) along with its 'rivers with floating vegetation often dominated by water-crowfoot' habitat.
- Borders Woods SAC (Site code 8211) which has been designated for its mixed woodland on base-rich soils associated with rocky slopes.

2.7.2 *Effectiveness of Maintenance Operations and Consented Changes*

A6091	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out.	Scottish Borders Council are sub-contracted by Amey to cut areas at Melrose and Kingsknowe under low frequency grass cutting
A6091	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	Scottish Borders Council are sub-contracted by Amey to cut areas at Melrose and Kingsknowe under high frequency grass cutting
A6091	Weed Spraying	01/06/2018 24/08/2018	This has been effective and in accordance with the contract.	No further information

2.7.3 *Unforeseen Issues and Limitations*

The footpath linking Darnwick to Melrose runs along the northern boundary of the A6091, this is well used by the local community but is in poor condition and has a low amenity value. Amey have received several requests to enhance this area and we have included this in the 2019/20 programme.

2.7.4 *Landscape Development Plan and Landscape Strategy Operations*

During 2018/19 no additional LDP or Landscape Strategy schemes were prioritised within the available budget for the A6091 route. There are currently 2 schemes identified within the LDP. Enhancement planting for Tweedbank Roundabout and a woodland management scheme adjacent to Black Path cycleway. The woodland management scheme will be completed as part of the 2019/20 budget.

2.7.5 Specific Opportunities for Improvement

Kingsknowe roundabout has been identified for possible landscape improvements within a proposed scheme investigation for the A7 route where it joins the A6091. This provides the opportunity to increase biodiversity and spring colour through additional bulb and enhancement planting reducing existing maintenance commitments.

There is also an opportunity for some enhancement planting and maintenance reduction in Tweedbank Roundabout. The introduction of native wildflowers in the roundabout would reduce the need for grass maintenance as well as it would encourage biodiversity and provide some visual interest.

The woodland adjacent to the existing Black Path cycleway which runs parallel to the A6091 requires management to address concerns raised by members of the community. Woodland areas have become overgrown and require management. Areas of daffodils within woodlands are becoming overgrown with scrub vegetation. The identified woodland management to address concerns of residents and users of the cycleway will be proposed to be undertaken within the budget available for 2019/20.

2.8 Route M8

2.8.1 General Condition of the Landscape Areas

The route is characterised by mature landscaping with a mix of grassland, verges, woodland and wildflower. The route is blighted by litter due to the high frequency of traffic on the route. Large quantities of litter occur at the exit routes from the Harthill Service Station.

The verges tend to be poor with grass suffering from weed infestation, slat spray damage, erosion and compaction. Wildflower such as red campion appears throughout the route in addition to weeds such as rosebay willow herb, broad leafed dock and ragwort. There are isolated areas of Japanese knotweed within grass verges mainly colonising from adjacent land out with the route boundary. Giant hogweed infestations are evident towards Hermiston Gait requiring urgent management where it is spreading into the existing grass verges where it can come into contact with maintenance operatives.

The woodland component of the landscape is mature with significant investment undertaken on woodland management during financial year 2108-19 providing the opportunity for future natural regeneration and biodiversity. The creation of glades and additional open space out with the verge areas provides the opportunity to introduce additional areas of wildflower. The effects of the SPHN in 2017 on the M8 larch tree numbers was significant and larch tree monitoring is ongoing although no other infections have been noted to date. Ash dieback has had a significant effect on the existing Ash trees along the route. A future regeneration programme of alternative species planting may require consideration.

The following sections describe the current conditions of the landscape surrounding the M8 within the 2018/19 reporting period.

Grassed Areas

This is one the busiest routes within the unit and this is reflected on the grassed verges. There are some areas where the grass has almost disappeared, and weeds have overtaken. The grassed verges that are closer to the hard shoulders and the central reservation present a generally poor state of health. The grass is very sparse, and the growth is weak, quite often yellowing. There are large patches of bare ground that leave room for other species to grow, like weeds or moss in the shadiest areas. The ground presents signs of salt splashing and erosion or compression, and there is litter on the verges.

Further information can be found in the Grassland Report which can be found within Appendix E.

Photo 13 - Grass verge on M8 including completed woodland management

Photo 14 Grassland on M8 illustrating significant weed infestation

Bulbs and Wildflowers

There is an area of lupins (*Lupinus polyphyllus*) to the north of Junction 3A, see Photo 15. Red Campion was also recorded from the route tours in 2018 (photo 16). Small patches of snowdrops and lesser celandine are recorded on the westbound verge between Junction2 Claylands and the bridge over the River Almond. There are no records of daffodils for this route.

Photo 15 - Lupins on the M8 just north of Junction 3A

Photo 16 - Red Campion on the M8

Invasive Species

The main weed growing along this route is rosebay willow herb, forming large patches of varying density and with different levels of infestation towards the adjacent land. Broad leafed dock spreads all along the route. Many patches of common ragwort grow close to the rosebay willow herb. Common ragwort adjacent to grazing land will be prioritised for eradication within the Injurious Species Report and Management Plan. Giant hogweed appears in clumps all along the route, especially around Hermiston Junction 1 (see photo 17)

Rhododendron ponticum appears in woodland areas within the boundaries of the route. This invasive species can be host of the pathogen *Phytophthora ramorum*, which has been found on larch trees along the route, with devastating consequences for these trees. Outbreaks of the pathogen may be subject of Statutory Plant Health Notices.

New areas of invasive species were recorded in 2018, including Japanese Knotweed, giant hogweed and common ragwort. Japanese knotweed was recorded directly adjacent to the hard shoulder against an existing bridge structure where it has established from an existing infested area out with the road network within an adjacent landowner (see photo 18).

Photo 17 - Giant hogweed on the M8

Photo 18 - Japanese knotweed on the M8 adjacent to structure

Photo 19 - Japanese knotweed on the M8 within verge area.

The weed hotspots database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas are being controlled and removed where necessary always with a previous inspection of the wildlife.

Ornamental shrub areas are few and only exist adjacent to Harthill services. Cyclic maintenance operations are carried out on a two-week cycle for high amenity shrub beds. The shrub beds at Harthill are overgrown and maintenance work is required.

Hedges, Trees and Woodland

As previously reported in 2017, Forestry Commission Scotland (now known as Forestry Scotland) issued a Statutory Plant Health Notice (SPHN) for positive *Phytophthora ramorum* on larch for the woodlands around Junction 3 on the M8. This required the felling of 940 trees, mostly larch but also some other species for operative purposes.

The SPHN will remain in force until 28th February 2021. The area is now regularly monitored for larch regeneration and all works undertaken within the boundary of the SPHN will follow the biosecurity protocols stated on the Appendix 2 of the Notice. Further monitoring or the area in question will continue in partnership with Scottish Forestry (formally Forestry Commission Scotland).

The current outbreak of *P.ramorum* on the STRU SE highlights the need for the landscape team to monitor all areas of woodland with larch trees throughout the route. Hedges, trees and other encroaching vegetation should be identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed. Two adjacent landowner dangerous trees were identified within the M8 route with one of the hazards identified now removed.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

Significant woodland management has taken place within the last two budget years which has resulted in areas of ground being opened up and encouraging natural regeneration

from existing seed banks supressed to date. The areas where natural regeneration is occurring will be monitored with invasive and other undesirable weeds being controlled through effective weed management.

The following nature conservation designated areas are within 2km of the M8:

- Hassockrigg and North Shotts Mosses SSSI (Site 1690) is situated immediately to the north of Shotts. It comprises two neighbouring expanses of raised bog, Hassockrigg Moss in the north and North Shotts Moss in the south. They represent two of the best examples of this habitat in central Scotland.
- Kirkton Quarry SSSI (Site 586) is situated on the northern outskirts of Bathgate, West Lothian. East Kirkton Quarry is a disused, tree-lined limestone quarry, cut into a gently sloping agricultural landscape. The site has yielded a rich terrestrial fossil fauna and flora that is remarkably well preserved, including the first fully-articulated amphibians found in Scotland. Invertebrate fossils are also present within the East Kirkton limestones. Many of the fossils found significantly pre-date similar remains from other areas of the world. This, combined with the richness of the fossil biota and the exceptionally high quality of the specimens obtained, make this a site of international importance for the study of early Carboniferous life.
- Tailend Moss SSSI (Site 1513) is a raised bog situated on low lying ground immediately south of the Bathgate to Edinburgh Railway line near Bathgate. The Moss consists of a complex of extensive wet peatland communities, dry heath and in the low-lying sections, open water pools and swamp vegetation. The raised bog habitat is colonised by heather, cross-leaved heath, hare's tail cotton grass (Eriophorum vaginatum) and purple moor grass (Molinia caerulea). Wet depressions contain cranberry (Vaccinium oxycoccus) and round-leaved sundew (Drosera rotundifolia), both of which are uncommon in the Lothian's, and also Sphagnum mosses

2.8.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
M8	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
M8	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
M8	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	No further information
M8	Weed Spraying	15/05/2018 21/05/2018 25/05/2018 07/08/2018 13/08/2018 17/08/2018	This has been effective and in accordance with the contract. Giant Hogweed density has been significantly reduced at areas around Hermiston Gait	Continued monitoring of Giant Hogweed should be undertaken
M8	Woodland Management		Two woodland management schemes were completed in	The schemes took place between Hermiston Gait

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
		September 2018 & January 2019	2018/19. These schemes were effective in removing trees and scrub that had the potential to become hazardous to the highway network. The works have also created easier access for operatives carrying out routine maintenance works on the verges. Improved visibility for all road users has been achieved	and Junction 5 westbound

2.8.3 Unforeseen Issues and Limitations

A Statutory Plant Health Notice on positive *Phytophthora ramorum* on larch was issued in October 2017 by the Forestry Commission Scotland (now Scottish Forestry) for the woodland areas around Junction 3, which required all the larch trees in the area to be felled, which was completed by Amey before the deadline of 28th February 2018. To comply with the issued SPHN at the M8 site cost Transport Scotland around half of the total landscape budget for financial year 2017/18.

The landscape team shall regularly monitor susceptible trees throughout the network, as more outbreaks of *P.ramorum* would lead to large impacts on habitats, landscape, urban screening, as well as implications on Amey's future landscaping budgets. Due to budget restrictions as a consequence of the Statutory Plant Health Notice woodland management issues identified on the route were programmed for financial year 2018/19.

2.8.4 Landscape Development Plan and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.8 below. There are 2 schemes remaining within the LDP and Landscape Strategy but none of these have been prioritised for the 2019/20 landscape budget. The monitoring of the M8 Junction 3 SPHN site for larch regeneration will continue through 2019/20.

Table 2.8: Schemes that have been completed

Route	M8	
Scheme Name	18/SE/0313/005	M8 Woodland Management
Location	Sheets 10 to 19	Between Hermiston Gait and Jct 3A
Synopsis	Woodland management	
Reasons for selection	Via Landscape Development Plan and Route Tours	
Cost estimate	I £7494 D £4891 C £216,833.17	
Priority rating	1	
State of Development	Completed	
Effectiveness	The woodland management works have greatly improved the overall appearance of the route at this location encouraging increased biodiversity and aiding ease of verge maintenance for operatives.	

Route	M8	
Scheme Name	18/SE/0313/004	M8 Woodland Management
Location	Sheets 4 to 10	Between Jct 3a and 5 west bound
Synopsis	Woodland management	
Reasons for selection	Woodland areas in need management were noted during annual route inspections. These areas were added to the Landscape Development Plan for 2018.	
Cost estimate	I £7522 D £5033 C £223689	
Priority rating	1	
State of Development	Completed	

Effectiveness	The woodland management works have greatly improved the overall appearance of the route at this location encouraging increased biodiversity and aiding ease of verge maintenance for operatives.

Route	M8	
Scheme Name	17/SE/0313/022	SPHN Tree felling
Location	Sheet 12	Junction 3
Synopsis	SPHN Area Monitoring	
Reasons for selection	SPHN Monitoring Requirements Via jointly with Forestry Commission Scotland	
Cost estimate	I £318 C N/A	
Priority rating	1	
State of Development	Completed	
Effectiveness	All larch trees have now been felled to comply with the SPHN notice. Further monitoring of larch regeneration is required until February 2021.	

2.8.5 Specific Opportunities for Improvement

This route is a main tourist and commercial route. Sculptures such as the Pyramids and the Horn are now landmarks along the route, however much of the route is stark and could be improved. Significant woodland schemes have been undertaken over the last number of years addressing mature woodland mixes, sightlines and improved access for maintenance activities. Potential verge improvements and wildflower sowing could enhance the positive woodland management contributing to the natural regeneration maximising biodiversity throughout the route.

Despite previous woodland management schemes being undertaken successfully further isolated obscured road signs have been identified which will require investigation and woodland management schemes proposed to address vegetation encroachment. This will provide the opportunity to design clearance areas creating open areas to promote natural regeneration of grassland encouraging grassland and wildflower diversity. In addition,

woodland clearance will ease access for maintenance activities such as litter collection and grass cutting.

2.9 Route M9

2.9.1 General Condition of the Landscape Areas

The landscape characteristic of this route is similar to the M8 in terms of woodland maturity although the grass sward tends to be of a higher quality although localised areas of grassland are poor. Bulbs and wildflower are evident along the route although wildflower could be enhanced where previous woodland management works have been concluded.

Significant brambles and other species of scrub are evident along the route to the rear of the grass verge and have been addressed where access has been required to existing culvert structures and underpasses. Further scrub management is required to aid access for additional litter clearance operations out with the grass verge areas. Rosebay willow herb occurs throughout the network although the control of giant hogweed and Rhododendron should be prioritised.

Previous extensive woodland management during 2018/19 has resulted in only limited areas where mature woodland encroachment is an issue for signage and access for maintenance operatives.

The following sections describe the current conditions of the landscape surrounding the M9 within the 2018 to 2019 reporting period.

Grassed Areas

The verges of this route are maintained under cyclic routine operations and in accordance with appendix 30/7 Grass, Bulbs and Wildflower Maintenance. There are the areas of rough grasslands that are not under any maintenance regime, they are normally on the embankments and it is mainly on these areas where the weeds grow.

In general the sward along this route presents a good level of health but there are some areas where this deteriorates, such as verges where erosion and salt splashing from the road bring the sward into a very poor condition. This is illustrated in the photo below and is characteristic of the majority of road verges on the network (Photo 18).

Photo 18 - Grass erosion within road verges

Bulbs and Wildflowers

There are 4052m2 of daffodil bulbs growing on grassed areas along the verges of this route, and therefore the timing of the first grass cut is programmed accordingly. 1528 m2 of daffodil bulbs grow in woodland areas.

A total of 71m2 of snowdrops have also been identified along the route.

A proposal through the LDP to encourage areas of wildflower planting will be addressed in the future LDP. Comfrey has been identified through the route tours in 35 locations in addition to 19 locations for red campion and 1 location for Spanish bluebells. See photographs below for examples of identified wildflower areas (Photo 19 and 20).

Photo 19 - Comfrey adjacent to verges

Photo 20 - Wildflowers on grass embankments

Invasive Species

The main weed within the grassland areas of this route is rosebay willow herb, appearing in large patches of varying density with low or no infestation towards the adjacent land. Broad leaf dock spreads all along the route and common ragwort has also been recorded. Several clumps of giant hogweed have been recorded along the route, becoming more abundant as the route progresses east, especially at Junction 10 Craigforth. *Rhododendron ponticum*, is starting to encroach the grassland in some areas. This can be a host plant for

the pathogen *Phytophthora ramorum*, which has been found on larch trees along the route, with devastating consequences for these trees and the woodland habitats.

The invasive weed database will remain as a reference to treat and control the infested areas as well as to monitor the operations.

Giant hogweed has been identified within the route and an appropriate management and spraying regime will be undertaken to eradicate prevent further spread (Photo 21)

Photo 21 - Giant hogweed on M9 route

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife.

Cyclic maintenance operations are carried out four times annually for high amenity shrub beds. Most shrub beds are in a poor condition and would benefit from some remedial planting

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation had been identified during routine inspections and were incorporated into the schedule of landscape opportunity schemes identified as priority 1 which were undertaken during 2018/19.

Dead or dying trees on the highway and adjacent land continue to be identified during route inspections. Amey continue to notify adjacent landowners of their responsibility to have dangerous trees and encroaching vegetation removed. One adjacent landowner

dangerous tree was identified in 2018/19, and a land search was initiated to identify the owner with a view to requesting the removal of the hazard.

Wetlands, Balancing Ponds and the Water Environment

Wetland areas exist within the trunk road boundary only at Junction 5 Cadgersbrae. This shall be inspected as necessary and any planting / thinning work carried out to both aquatic and pond edge planting through the LDP.

Biodiversity

Records show an active badger sett was discovered on the M9 at the Junction 1 southbound slip road.

No specific opportunities have been identified for the grassland areas, although there are several measures that could enhance biodiversity and reduce some of the maintenance works through the reduction in grass cutting frequencies where appropriate and the introduction of wildflower mixes dependant on individual locations and characteristics.

During budget year 2018/19 three large woodland management schemes have been undertaken to address planting mix densities, promote good tree health, improve access for maintenance and sightlines and address unhealthy vegetation. These works have also been designed to increase light levels and encourage natural regeneration and biodiversity. These areas will be monitored to establish increases in biodiversity.

The following nature conservation designated areas are within 2km of the M9:

- Balquhidderdock Wood SSI (Site 141) is a small remnant of mixed deciduous wet woodland occurring on the north-east facing slope of the Carse of Stirling near Bannockburn. The western end of the site is wetter and dominated by alder, whereas the eastern end becomes increasingly drier and dominated by oak, although alder is still present in the canopy layer. The site is notified for wet woodland.
- Kippenrait Glen SSSI (Site 866) is comprised of the wooded banks of the Wharry burn, the Cock's Burn and the Allan Water and lies between the settlements of Bridge of Allan and Dunblane to the north of Stirling. This large woodland SSSI consists mainly of base-rich, mixed valley woodland of ancient/long-established origin. Wet upland ash woodlands are uncommon in the Stirling Council area and this site is the largest woodland of its type in the area.

- Wolf's Hole Quarry SSSI (Site 1643) is a small geological site which was previously a quarry, located at the northwest edge of Bridge of Allan. The quarry occurs in the Lower Old Red Sandstone Sheriffmuir Formation containing rare and unique Dittonian fossil fish.
- Sauchie Craig Wood SSSI (Site 1407) lies along the Bannock Burn around five kilometres southwest of Stirling. The southern edge of this scarp woodland is bounded by steep limestone crags, whilst the northern edge of the site forms the banks of the burn.
- Linlithgow Loch SSSI (Site 939) is situated on the northern edge of Linlithgow, south of the M9 motorway. The site comprises the loch and the surrounding semi-natural habitats including the reed-beds, grassland, scrub and woodland. Linlithgow Loch is the largest natural freshwater loch in the Lothian area, and is an example of a lowland eutrophic loch. The Loch supports representative examples of aquatic and emergent plant communities.
- Philipstoun Muir SSSI (Site 1286) is situated 1 km east of the village of Philpstoun, this site is a representative example of the mixed deciduous woodland to be found in West Lothian although, unlike other examples of this habitat, it is unusual in that it is not in a river gorge. The woodland is dominated by sycamore, with ash and birch. Oak is also present but is a less common feature of the woodland.
- Bo'mains Meadow SSSI (Site 234) is a small, enclosed, species-rich lowland meadow or neutral grassland lying on a gentle north-facing slope at an altitude of 100 metres. It is situated south of the town of Bo'ness on the southern side of the Forth estuary. The site is immediately adjacent to Bo'mains Reservoir which has been infilled and taken out of commission.
- Avon Gorge SSSI (Site 108) comprises the steep, wooded banks of the River Avon, approximately 2km south-east of Grangemouth. This site is one of the few remaining ancient, semi-natural woodland sites in the Falkirk area. The wood has been relatively undisturbed and there is a good variety and age structure of native deciduous trees, including elm, oak, alder, hazel, ash, rowan and wild cherry.
- Firth of Forth SSSI (Site 8163) covers the coastline stretching from Alloa along the Fife coast as far as Crail and along the Falkirk and Lothian coast to Dunbar. The site is important for the variety of coastal habitats which are found. The estuary west of the Forth Bridges contains extensive invertebrate-rich intertidal

mudflats which provide feeding grounds for nationally and internationally important numbers of wintering and migratory birds.

- Firth of Forth SPA (Site 8499) is a complex of estuarine and coastal habitats in south east Scotland stretching east from Alloa to the coasts of Fife and East Lothian, with the same boundaries of the SSSI of the same name show in Figure 10.5. The site includes extensive invertebrate-rich intertidal flats and rocky shores, areas of saltmarsh, lagoons and sand dune. The site is underpinned by the Firth of Forth SSSI.
- Firth of Forth RAMSAR (Site 1111) Encompassed by the same boundary as the SPA and SSSI described above, the site provides habitat for large numbers of wintering waders and wildfowl, many in nationally and internationally important numbers, and a number of aesthetic, archaeological, sporting and recreational interests lend added value.
- River Teith SAC (Site 8367). The SAC boundaries follow the line of the river as it flows south east from Doune before becoming part of the River Forth which the runs under the A9 north of Stirling.
- Kippenrait Glen SAC (Site 8284) comprises mixed woodland on base-rich soils associated with rocky slopes. The SAC shares the same boundaries with the SSSI of the same name.

2.9.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
M9	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
M9	Grass Cutting Medium Frequency	Seven cuts undertaken	This has been effective and in accordance with the contract. Grass	No further information

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
		between April and October.	cutting height of between 50 - 60mm has been carried out	
M9	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	No further information
M9	Weed Spraying	14/05/2018 22/05/2018 23/05/2018 25/05/2018 06/08/2018 14/08/2018 15/08/2018 17/08/2018	This has been effective and in accordance with the contract.	No further information
M9	Woodland Management	January/April 2019	The woodland, scrub and vegetation management schemes improved visibility, opened areas to increase biodiversity through natural regeneration. The removal of existing areas of gorse and scrub has improved access for routine maintenance operations	Three schemes were undertaken on the M9 and additional information on these is shown in Table 2.9 below

2.9.3 Unforeseen Issues and Limitations

There are many distinctive high-quality features along the route including House of the Binns, Linlithgow Palace, Stirling Castle, Wallace Monument and Dunblane Cathedral. Views of these distinctive features provide interest to the traveller. As the roadside planting matures some views are becoming obscured and action should be taken to ensure that these remain open. It is also important to manage roadside tree planting to maintain the screening between the M9 and adjacent commercial, industrial and residential developments on the outskirts of Grangemouth.

2.9.4 Landscape Development Plan and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.9 below. There are 2 schemes remaining within the LDP and Landscape Strategy but none of these have been prioritised for the 2019/20 landscape budget.

Table 2.9: Schemes that have been completed

Route	M9	
Scheme Name	18/SE/0313/009	M9
Location	Sheet 20 to 22	Junction 10 to 11 north and south bound
Synopsis	Woodland management	
Reasons for selection	Landscape Development Plan 2017 and route tour 2018	
Cost estimate	I £4594 D £2296 C £101468	
Priority rating	1	
State of Development	Completed	
Effectiveness	The woodland, scrub and vegetation management improved visibility, opened up areas to increase biodiversity through	

	natural regeneration. Improved health of existing tree stock and removed identified areas of gorse.

Route	M9	
Scheme Name	18/SE/0313/006	M9
Location	Sheet 5 to 13 Sheet 5 (M876)	Junction 3 to 7 north bound
Synopsis	Woodland management	
Reasons for selection	Landscape Development Plan 2017 and route tour 2018	
Cost estimate	I £9184 D £5837 C £263239	
Priority rating	1	
State of Development	Completed	
Effectiveness	The woodland, scrub and vegetation management improved visibility, opened up areas to increase biodiversity through natural regeneration north bound. Improved health of existing tree stock and removed identified areas of gorse and associated scrub to improve access for maintenance.	

Route	M9	
Scheme Name	19/SE/0313/003	M9
Location	Sheet 4 to 13	Junction 7 to 2 south bound
Synopsis	Woodland management	
Reasons for selection	Identification of management requirements from the route tour 2018.	
Cost estimate	I £N/A D £N/A C £190439	
Priority rating	1	
State of Development	Completed	
Effectiveness	The woodland, scrub and vegetation management improved visibility, opened up areas to increase biodiversity through natural regeneration north bound. Improved health of	

	existing tree stock and removed identified areas of gorse and associated scrub to improve access for maintenance.

2.9.5 Specific Opportunities for Improvement

No specific opportunities have been identified for the grassland areas, although there are several measures that could enhance biodiversity and reduce some of the maintenance works through the reduction in grass cutting frequencies where appropriate and the introduction of wildflower mixes dependant on individual locations and characteristics. The woodland management schemes undertaken during financial year 2018/19 have created opportunities for natural redevelopment of open spaces in accordance with the principles of the 'Fitting Landscapes' document. A further woodland management scheme has been identified for consideration should financial budgets allow between junction 1 and 3 which will address the health and sustainability of the existing established woodland.

Out with woodland management schemes undertaken successfully in 2018/19 further isolated obscured road signs have been identified elsewhere on the network which will require investigation and woodland management schemes proposed to address vegetation encroachment. This will provide the opportunity to design clearance areas creating open areas to promote natural regeneration of grassland encouraging grassland and wildflower diversity. In addition, woodland clearance will ease access for maintenance activities such as litter collection and grass cutting.

2.10 Route M80

2.10.1 General Condition of the Landscape Areas

Most of the landscape is in good condition with limited areas of grassland poor showing signs of erosion and salt spray damage. Rosebay willow herb is present throughout the route between areas of woodland and grass verges. Weed management will be focused on the management of giant hogweed and identified Japanese knotweed adjacent to grass verge areas. Significant areas of gorse on the network embankments require a programme of control where they encroach towards the grass verges. The route includes areas of minimal frequency cut grassland provide the opportunity for wildflower enhancement. Where the route adjoins residential housing fly tipping is present within woodland at the boundary and requires attention.

The following sections describe the current conditions of the landscape surrounding the M80 within the 2018/19 reporting period.

Grassed Areas

The sward presents generally a good health on the embankments where the grass covers the ground thickly, presenting a uniform aspect. The sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and the verges are clean. There are some exceptional places where it has been overrun, and over the retaining walls it is often in a very poor condition.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

The daffodil inventory holds records of 44m2 of daffodil bulbs growing on grassed areas along this route, and therefore the timing of the first grass cut is programmed accordingly. 47m2 of daffodil bulbs grow within woodland areas.

Invasive Species

The main weed growing within the grassland areas of this route is rosebay willow herb. There are some areas with severe levels of giant hogweed infestation, especially at the Bannockburn Junction.

Giant hogweed has been identified in a number of locations and subsequently recorded in IRIS. Rosebay willow herb was recorded throughout the route and Japanese knotweed

updates were undertaken in IRIS. The 2018 route tour identified 1 new area of daffodils and 4 areas of comfrey.

Broad leaved dock spreads all along the route, and there is also some Japanese knotweed.

The invasive weed database will be used as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife. Areas of gorse have also been identified and updated in IRIS for potential future scheme consideration.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation should be identified during routine inspections in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections. Many mature trees were lost due to construction upgrading works, age, Dutch elm disease and stresses related to being close to the road.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed.

Woodland areas along the route mainly consist of newly planted species within tree shelters. This was the result of the upgrading works and should still be in the establishment and maintenance period; however, no details of handover dates or inventory plans have been submitted by the previous Operating Company.

The Statutory Plant Health Notice on positive *Phytophthora ramorum* on larch issued in October 2017 for the woodland areas on the M8 Junction 3, highlights the need to closely monitor any woodland areas within the Unit that contain larch trees, as well as any possible new areas of *Rhododendron ponticum*, which acts as a host plant for the pathogen.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuD's ponds within the trunk road boundary.

Biodiversity

Weed management has been carried out on giant hogweed and identified Japanese knotweed adjacent to grass verge areas.

The M80 includes areas of minimal frequency cut grassland which creates the opportunity for wildflower enhancement.

The following nature conservation designated areas are within 2km of the M80:

- Dullatur Marsh SSSI (Site 548) lies two kilometres east of Kilsyth adjacent to the Forth and Clyde Canal. It provides a good example of hydroseral zonation, from open water through fen to fen meadow, marshy grassland and fen woodland and is a remnant of the once extensive Kelvin Valley wetlands.
- Carron Glen SSSI (Site 332) is a composite site in three sections located along a 5km stretch of the River Carron to the west of Denny in Falkirk. The steep, often rocky slopes of the glen support the largest tract of ancient/long established deciduous woodland in the Falkirk area. The woodland comprises several recognised woodland types, reflecting the variety of soil types found in the glen.

2.10.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
M80	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
M80	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
M80	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	No further information
M80	Weed Spraying	14/05/2018 24/05/2018 25/05/2018 06/08/2018 16/08/2018 17/08/2018	This has been effective and in accordance with the contract.	New areas of giant hogweed and Japanese knotweed identified and programmed for spraying

2.10.3 Unforeseen Issues and Limitations

A landscape scheme was undertaken at Castlerankine to address encroachment directly onto the network and adjacent landowners. This included woodland mix thinning designed to address existing health issues and promote biodiversity through the natural regeneration of the understory. A complaint relating to these works from a member of the public was received by Transport Scotland and a Stage 2 Complaint Review was undertaken.

2.10.4 Landscape Development Plan and Landscape Strategy Operations

During 2018/19 no additional LDP or Landscape Strategy schemes were prioritised within the available budget for the M80 route. There is currently one woodland management scheme identified within the LDP. This will be planned when future budgets allow.

2.10.5 Specific Opportunities for Improvement

Grass cutting regimes to be assessed with a view to reducing the number of cuts on embankments or the removal of grass maintenance completely. This may significantly

reduce risk to operatives and encourage natural regeneration and biodiversity. Possible introduction of wildflower mixes within certain localities will also be considered. An invasive weed control programme will be developed and undertaken to address the identified areas of giant hogweed and Japanese knotweed.

2.11 Route M876

2.11.1 General Condition of the Landscape Areas

The route comprises of grass verges, rough grassland scrub, including significant quantities of gorse and mature woodland. Litter resulting from fly tipping to the rear of residential properties bordering the network is an issue and vegetation removal may be required to allow access to address this issue. There are significant quantities of Rhododendron which has been identified for management and reduction.

Mature woodland requires management and unhealthy material addressed through removal which will also deal with encroachment issues throughout the route. There are several areas where what appears to be hedging material, now outgrown as mature and semi-mature trees also require attention to address densities and encroachment to promote healthy growth. Grassland and verges are in an acceptable condition throughout the network with encroachment requiring management, particularly in close proximity to the retaining structures on the route.

The following sections describe the current conditions of the landscape surrounding the M876 within the 2018 to 2019 reporting period.

Grassed Areas

The health of the grass is good in general on this route, except where there are gabion retaining walls. Gorse has also established adjacent to retaining walls and will require monitoring and control (photo 25). In these locations the soil appears to be much more exposed to erosion, and the weeds are overtaking grass. There is some encroachment from adjacent woodland and scrub into the grassland.

Further information can be found in the Grassland Report which can be found within Appendix E.

Photo 25 - Illustration of retaining wall structures with gorse establishing

Bulbs and Wildflowers

There are 622m2 of daffodil bulbs growing on woodland area within the route verges. Bluebells have been identified through the route tours and updates have been made in IRIS as appropriate (photo 26). The route tour in 2018 identified an additional 3 areas of Spanish bluebells, 2 areas of comfrey and 1 area of lady smock.

Photo - 26 Bluebells within grassland areas M876

Invasive Species

Rosebay willow herb is the main weed along the grassland areas of this route. Common ragwort is also present, but in lower numbers. Broad leaved dock is also quite common on this route, presenting an especially high population at Bowtrees Roundabout.

Rhododendron ponticum, which is a severe infestation in the woodlands along the road. This can be a host plant for the pathogen *Phytophthora ramorum*, which has been found on larch trees along the route, with devastating consequences for these trees and the woodland habitats.

The weed hotspots database will be used as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife.

No ornamental shrub areas exist within the route boundary.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation should be identified during routine inspections, in order to keep them under a safe condition, or to undertake any

replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections. Many mature trees were lost due to construction upgrading works, age, Dutch elm disease and stresses related to being close to the road.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed.

There are large areas of larch trees are underplanted with *Rhododendron ponticum* on the verges of this route. This could be a prime area for the P. ramorum pathogen to take hold and spread further across the network, so these areas will need to be monitored closely.

Woodland management schemes were undertaken in financial year 2018/19 addressing vegetation encroachment and woodland thinning to encourage healthy growth and natural regeneration. Woodland overhanging existing public pathways out with the route boundary have been addressed improving the local environment (photo 27).

Photo 27 - Overhanging trees affecting existing pathways within residential area addressed through woodland management undertaken 2018/19

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however, there are no wetland areas or SuDS ponds within the trunk road boundary.

Biodiversity

There are significant quantities of Rhododendron ponticum which has been identified for management and reduction to protect woodland habitats and associated biodiversity.

Woodland management schemes are planned for the M876 in 2019/20. This will address the health and sustainability of the existing established woodland and improve overall biodiversity.

The Firth of Forth SSSI, SPA and Ramsar sites are all located within 2km of the M876.

The site is important for the variety of coastal habitats. The estuary west of the Forth Bridges contains extensive invertebrate-rich intertidal mudflats which provide feeding grounds for nationally and internationally important numbers of wintering and migratory birds.

2.11.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
M876	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
M876	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
M876	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of	No further information

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
			between 25 - 30mm has been carried out	
M876	Weed Spraying	14/05/2018 24/05/2018 25/05/2018 06/08/2018 16/08/2018 17/08/2018	This has been effective and in accordance with the contract.	No further information
M876	Woodland Management	Between October 2018 and March 2019	The woodland management has addressed issues relating to encroachment onto residential properties and public land	Table 2.11 below provides further information

2.11.3 Unforeseen Issues and Limitations

There have been no unforeseen issues or limitations apart from those mentioned in Chapter 7 identified along the M876 route in the 2018 to 2019 reporting year.

2.11.4 Landscape Development Plan and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.11 below. There is one woodland management scheme remaining within the LDP and Landscape Strategy and this will be carried out as part of the 2019/20 landscape budget. The issue of Rhodedendron ponticum will be looked at during investigations for the woodland management scheme proposed for the M876. Where deemed necessary the ponticum will be removed during woodland management operations.

Table 2.11: Schemes that have been completed 2018/19

Route	M876

Scheme Name	17/SE/0313/018	
Location	Sheet 1, 2 and 3	Junction 2 Woodland Management (incl. Balfour Terrace)
Synopsis	Woodland management between network and residential properties	
Reasons for selection	Public and local authority enquiries and route tour visits	
Cost estimate	I £2426.00 C £56528.00	
Priority rating	1	
State of Development	Completed	
Effectiveness	Encroaching vegetation on a designated public footpath has been removed including windblown trees promoting safe environments for pedestrians and residents with clear sight lines established	

Route	M876	
Scheme Name	18/SE/0313/015	
Location	Sheet 1	Woodland Management adjacent to Norwood Avenue
Synopsis	Woodland management between network and residential properties	
Reasons for selection	Identified by Route Engineer	
Cost estimate	I N/A C £14248.00	
Priority rating	N/A	
State of Development	Completed	
Effectiveness	Encroaching vegetation at rear of residential properties has been removed including windblown trees promoting safe environments.	

Route	M876	
Scheme Name	18/SE/0313/022	
Location	Sheet 1	Woodland Management adjacent to Drove Loan

Synopsis	Woodland management between network and residential properties
Reasons for selection	Identified by Route Engineer
Cost estimate	I N/A C £15705.72
Priority rating	N/A
State of Development	Completed
Effectiveness	Encroaching vegetation at rear of residential properties has been removed including windblown trees promoting safe environments.

2.11.5 Specific Opportunities for Improvement

Rhododendron ponticum is widely spread on woodland areas within the route boundaries. This invasive species can be a host plant of the pathogen *Phytophthora ramorum, which* causes extensive damage and death to larch trees on the UK. Outbreaks of this pathogenic fungus may be subject of Statutory Plant Health Notices from Forestry Commission Scotland. Removing *Rhododendron ponticum* from woodland areas would result on an improvement to biodiversity and would help preventing a major problem for woodland habitats and landscape as an outbreak of *Phytophthora ramorum* would be. There is also the opportunity where previous woodland management has taken place to promote additional wildflower planting out with verge and visibility splay areas.

Identified Woodland Management Schemes

- M876 Woodland Management - This scheme was identified from the route tour undertaken in 2018 to address woodland thinning and associated management for the existing woodland in accordance with good arboricultural practice.

2.12 Route A977

2.12.1 General Condition of the Landscape Areas

The landscape within this route is restricted in areas by the presence of pedestrian pathways leaving little room for landscape to the route boundaries. High amenity grassland in Kincardine and on the roundabouts, is uniform and acceptable although the general sward condition throughout the route is poor. Road salt damage is prevalent where boundary walls are located to the rear of verges. Rosebay willow herb and broadleaf dock is evident throughout the route with an area of Japanese knotweed identified encroaching from adjacent land out with the route. Gartarry roundabout has been identified for vegetation and woodland management to address sightline issues for road users. The existing planting has little amenity value and limited species diversity. There is an opportunity to enhance the wildflower and bulbs currently identified within the route.

The following sections describe the current conditions of the landscape surrounding the A977 within the 2018 to 2019 reporting period.

Grassed Areas

There is some encroachment from the woodland in the narrow verges (between Kilbagie Roundabout and Kincardine). The sward on the low maintenance verges is in very poor condition due to erosion. It does not seem to be under any kind of treatment. There are some areas of high amenity grass on this route, as it passes through Kincardine. They appear to be maintained by Fife Council. High amenity value verge was recorded through the route tours in 2018 (photo 28).

Photo 28 - Wide verge maintenance adjacent to A977

The health of the sward on this route is related to the maintenance regime. In the high amenity areas in Kincardine and also in the roundabouts along the route, the grass covers the ground thickly, presenting a uniform aspect. The sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and there is no litter. In the rest of the verges, the health of the sward is rather poor, the grass has almost disappeared, leaving large patches of bare ground that leave room for other species to grow, like weeds or moss in the shadiest areas.

This situation seems to come from the narrowness of the road and also because these verges are often lined by stone walls, leaving them very exposed to salt splashes from the road and erosion.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There is a total of 112m2 of daffodil bulbs on grass areas on the verges of the route, and therefore the timing of the first grass cut is programmed accordingly.

Invasive Species

Rosebay willow herb and spreading thistle are the main weeds on the grassland of this route. Broad leaved dock and common ragwort appear in some areas mixed amongst them. An area of Japanese knotweed was identified and registered in May 2017 and further monitored during the route tours in 2018.

The weed hotspots database will be used as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas are controlled and removed where necessary always with a previous inspection of the wildlife.

No ornamental shrub areas exist within the route; however, Gartarry Roundabout has been included within the LDP to add shrub planting to enhance the visual amenity and landscape character.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation are being identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will continue to be identified during these inspections.

Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed.

The Statutory Plant Health Notice on positive *Phytophthora ramorum* on larch issued in October 2017 for the woodland areas on the M8 Junction3, highlights the need to closely monitor any woodland areas within the Unit that contain larch trees, as well as any possible new areas of *Rhododendron ponticum*, which acts as a host plant for the pathogen.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches; however there are no wetland areas or SuD's ponds within the trunk road boundary.

Biodiversity

Introduction of shrub planting within Gartarry Roundabout would enhance biodiversity and further minimise maintenance by reducing the areas of grassland requiring cutting.

Further invasive species management regimes shall be established and implemented throughout the growing season.

There is a total of nine SSSI, two SPA and a Ramsar site within 2km of the A977. These sites are identified below:

- Firth of Forth SSSI (Site 8163) covers the coastline stretching from Alloa along the Fife coast as far as Crail and along the Falkirk and Lothian coast to Dunbar. The site is important for the variety of coastal habitats. The estuary west of the Forth Bridges contains extensive invertebrate-rich intertidal mudflats which provide feeding grounds for nationally and internationally important numbers of wintering and migratory birds.
- Loch Leven SSSI (Site 993) lies midway between Edinburgh and Perth, in the shadow of the Lomond Hills, to the east of Kinross. The loch is important for its freshwater habitat, which is naturally rich in nutrients (eutrophic), the fen and swamp areas fringing the loch edges, breeding and non-breeding wildfowl and its rare vascular plants and beetles.
- Damhead Wood SSSI (Site 495) lies 1km south of Dollar on the south bank of the River Devon, on a predominantly north-facing slope. The site is important for its ancient wet woodland which consists of slope and mixed alderwood with ash, birch and willow, a rare habitat in Clackmannanshire.
- Gartmorn Dam SSSI (Site 678) is sited in the lowland area of central Clackmannanshire, 2.5 km north-west of Alloa and 2km north of Clackmannan. The site is the largest area of open water in the district and represents a typical eutrophic lowland loch, with characteristic submerged plants, surrounded by open water transition fen of marginal vegetation and reed swamp.
- Linn Mill SSSI (Site 941) is a valley woodland on the River Black Devon lying approximately two kilometres north-east of Clackmannan. It is designated for its upland mixed ash woodland interest which encompasses three main woodland types.

- Craigmad Wood SSSI (Site 438) lies 5km to the east of the town of Clackmannan, on gentle south facing slopes running down to the gorge of the Bluther Burn. The site is important for its lowland dry heath and upland oak woodland; both habitats are rare in central Scotland.
- Devon Gorge SSSI (Site 510) lies approximately 4km east of Dollar, on the boundary between Clackmannanshire and Perth and Kinross. The site is important as it is the only upland mixed ash woodland on Carboniferous rocks within Perth & Kinross.
- Gartwhinzean Meadow SSSI (Site 680) is located 12 km south-west of Kinross near Powmill. It is important for its unimproved herb-rich grassland.
- Back Burn Wood and Meadows SSSI (Site 111) lies in the valleys of the Back Burn and Hole Burn and is located 3 km east of the town of Dollar, 1 km south-west of the Pool of Muckhart. The site is important for its relatively undisturbed upland mixed ash woodland woodland, an uncommon and declining habitat in Clackmannanshire, and an area of predominantly herb rich acid grassland.
- Firth of Forth SPA (Site 8499) is a complex of estuarine and coastal habitats in south east Scotland stretching east from Alloa to the coasts of Fife and East Lothian, with the same boundaries of the SSSI of the same name. The site includes extensive invertebrate-rich intertidal flats and rocky shores, areas of saltmarsh, lagoons and sand dune. The site is underpinned by the Firth of Forth SSSI.
- Loch Leven SPA (Site 8530) is the largest natural eutrophic lake in Britain. It is a relatively shallow loch, surrounded by farmland, with a diverse aquatic flora and shoreline vegetation. The boundary of the Loch Leven SPA follows that of the Loch Leven SSSI except for the exclusion of 4 ha of SSSI towards the northern end of the loch.
- Firth of Forth Ramsar (Site 1111) is encompassed by the same boundary as the SPA and SSSI described above, and provides habitat for large numbers of wintering waders and wildfowl, many in nationally and internationally important numbers, and a number of aesthetic, archaeological, sporting and recreational interests lend added value.

2.12.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A977	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
A977	Grass Cutting Medium Frequency	Seven cuts undertaken between April and October.	This has been effective and in accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	No further information
A977	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	No further information
A977	Weed Spraying	30/05/2018 22/08/2018	This has been effective and in accordance with the contract.	No further information

2.12.3 Unforeseen Issues and Limitations

Unforeseen issues or limitations are discussed in Chapter 7.

2.12.4 Landscape Development Plan and Landscape Strategy Operations

No schemes were carried out in relation to the LDP and Landscape Strategy for this route during 2018/2019. Gartarry Roundabout remains the only scheme to be completed.

2.12.5 Specific Opportunities for Improvement

There is an opportunity to introduce wildflowers and reduce the maintenance works and enhance biodiversity in Gartarry Roundabout dependant on topsoil fertility test results. A reduce grass cutting regime can be incorporated out with any visibility splays.

2.13 Route A985

2.13.1 General Condition of the Landscape Areas

The verges are generally in poor condition with sward thin to no grass at all in certain locations particularly in one section of the route. The roundabouts illustrate better quality grass areas although road salt damage is illustrated throughout the route.

The bulb planting is located predominantly on the roundabouts although there is an opportunity for further enhancement. The roundabouts would benefit from sustainable landscape redevelopment which would reduce maintenance frequencies and operative risk.

Woodland management of existing maturing shelter belt planting is required within the route to thin out planting densities, promote healthy growth and natural regeneration. Within areas the woodland planting is encroaching within the 1.2m wide grass verges and affecting visibility and restricting maintenance operations. Existing boundary hedges are well established and require cutting as per good horticultural practice.

The following sections describe the current conditions of the landscape surrounding the A985 within the 2018 to 2019 reporting period.

Grassed Areas

Part of the route, between High Valleyfield and the junction with B9037, is fence lined, and the grass has been severely damaged and eroded by spray from the road. Poor grass sward adjacent to the highway was recorded through the 2018 route tours (photo 29).

Photo 29 - Poor quality grass verge

The sward presents in general acceptable health, the grass grows in big clumps that cover the ground in quite a uniform way, but many of these clumps are yellowing at the base. Weeds and herbaceous plants of different kind intermingle over the grassland area and there is litter on the verges. There are also signs of salt splashing and erosion on the edges, some patches damaged by deflected vehicles, and some areas of mole hills. In the amenity areas and roundabouts (Oakley Roundabout) the sward presents a good health level due to the higher maintenance regime.

Further information can be found in the Grassland Report which can be found within Appendix E.

Bulbs and Wildflowers

There are 91.5m2 of daffodil bulbs growing on grass areas along the route, predominantly in roundabouts. The timing of the first grass cut is programmed accordingly.

Two small areas of snowdrops can also be found along the route.

The 2018 route tours identified 2 new areas of daffodils, 1 area of primrose and 1 area of garden candytuft.

Invasive Species

The grassland areas of this route contain a high proportion of invasive species, with the main two being spreading thistle and rosebay willow herb. Common ragwort, giant hogweed and broad dock are also present.

The weed hotspots database will be used as a reference to treat and control the infested areas as well as to monitor the operations.

Scrub and Shrubs Areas

Scrub areas will be controlled and removed where necessary always with a previous inspection of the wildlife.

Hedges, Trees and Woodland

Hedges, trees and other encroaching vegetation should be identified during routine inspections, in order to keep them under a safe condition, or to undertake any replacement. Dead or dying trees on the highway and adjacent land will also be identified during these inspections. Amey will continue to notify adjacent landowners on their responsibility to have dangerous trees and encroaching vegetation removed.

The Statutory Plant Health Notice on positive *Phytophthora ramorum* on larch issued in October 2017 for the woodland areas on the M8 Junction3, highlights the need to closely monitor any woodland areas within the Unit that contain larch trees, as well as any possible new areas of *Rhododendron ponticum*, which acts as a host plant for the pathogen.

Wetlands, Balancing Ponds and the Water Environment

There are several areas where running water crosses or runs alongside the highway - either as burns or as open ditches. There are no wetland areas within the trunk road boundary.

Biodiversity

The presence of an otter holt has been discovered at the Kincardine Bridge southern viaduct.

Woodland management of existing maturing shelter belt planting is required within the route to thin out planting densities, promote healthy growth and increase biodiversity through natural regeneration.

There are opportunities in some areas to reduce the maintenance regime and improve the biodiversity along the route. This could be undertaken at roundabouts with the introduction of wild flowers. This could be considered in areas where maintenance access and egress present additional hazards for landscape operatives.

There are Conservation Areas at Kincardine, Culross, Inverkeithing, Pattiesmuir, Charlestown and Limekilns and Gardens and Designed Landscapes at Culross Abbey House, Valleyfield, Dunimarle Castle and Tulliallan.

The following nature conservation designated areas are within 2km of the A985:

- The Firth of Forth SSSI (Site Code 8163) designated for its populations of 40 species of birds.
- The Firth of Forth SPA (Site Code 8424) has been designated for 28 species of birds.
- The Firth of Forth Ramsar (Site Code 8499) site has been designated for 10 species of birds.
- St Margaret's Marsh SSSI (Site Code 1659) has been designated for its Fen, marsh and swamp (Wetland) (Transition saltmarsh) and its Littoral sediment (Coast) (Saltmarsh)
- Ferry Hills SSSI (Site Code 630) has been designated for its Lowland Calcareous grassland and its Igneous petrology (Carboniferous - Permian Igneous)

A

2.13.2 Effectiveness of Maintenance Operations and Consented Changes

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
A985	Gras Cutting Low Frequency	Three cuts undertaken between May and September	This has been effective and in accordance with the contract. Grass cutting height of between 50 -70mm has been carried out	No further information
A985	Grass Cutting		This has been effective and in	No further information

Route/Location	Maintenance Operation Undertaken	Dates Undertaken	Effectiveness	Additional Information
	Medium Frequency	Seven cuts undertaken between April and October.	accordance with the contract. Grass cutting height of between 50 - 60mm has been carried out	
A985	Grass Cutting High Frequency	Thirteen cuts undertaken between April and October	This has been effective and in accordance with the contract. Grass cutting height of between 25 - 30mm has been carried out	No further information
A985	Weed Spraying	30/05/2018 22/08/2018	This has been effective and in accordance with the contract.	No further information
A985	Woodland Management for access issues	October/December 2018	Woodland clearance to allow access path has been effective	See Table 2.13 below for further information

2.13.3 Unforeseen Issues and Limitations

Unforeseen issues or limitations are discussed in Chapter 7.

2.13.4 Landscape Development Plan and Landscape Strategy Operations

Schemes completed in 2018 from the Landscape Development Plan and Landscape Strategy are shown in Table 2.11 below. There are two remaining roundabout enhancement schemes still to be completed. These are not planned to be undertaken in 2019/20.

Table 2.13: Schemes that have been completed 2018/19

Route	A985	
Scheme Name	17/SE/0313/023	

Location	Sheet 7	Kincardine Orchard Grove access path improvements for maintenance, Phase 2.
Synopsis	Access path upgrade and additional vegetation management to enable works to be completed.	
Reasons for selection	Via Emma Burns – complaint complimenting vegetation clearance undertaken 2017/18	
Cost estimate	I N/A C £23135.15	
Priority rating	1	
State of Development	Completed	
Effectiveness	Pathway access route restored for maintenance complimented with vegetation management to aid safe access.	

2.13.5 Specific Opportunities for Improvement

Opportunity to reduce the maintenance on some of the roundabouts by introducing native wild flowers:

Although the current maintenance regime is effective at Oakley Roundabout, by introducing appropriate wildflower mixes the need for grass cutting could be decreased and may also favour the growth of native species out with identified sight lines. There is also the opportunity to enhance Rosyth Roundabout through the introduction of native wild flower plug planting and additional low growing shrubs to reduce the need for maintenance and encourage biodiversity.

Woodland management adjacent to Orchard Grove is proposed to be carried out within the 2019/20 landscape budget.

3 Progress of the Pesticide Plan

The invasive weed register will assist in identifying and ensuring successful treatment of weed infestations along the route.

The pesticide usage as indicated in the pesticide records in appendix B illustrate that despite the addition of more injurious species, spray volume has reduced throughout the network. This is primarily due to a decision to change the adjuvant product from Headland Guard to Silwet. Silwet can can improve efficacy so that less product is needed to produce the desired effects. This has resulted in greater efficiency, value and profitability out of the chemicals for the maintenance contractor. The lower spray volumes have obvious environmental benefits reducing chemical usage, minimizing potential pollution and run off risks and greater efficiency targeting weed species.

The route tours organized in 2019 will establish the effectiveness of the weed control operations regarding controlling the identified injurious weed species throughout the network.

3.1 Pesticide Records

See Appendix B

4 Performance of Contractors

The inspection team carry out grass cutting monitoring exercises where approximately 80 random areas across the SE trunk road network are measured for contract compliance during the growing season of March to September.

Of the total number of grass heights measured and visually inspected, all areas were compliant and met with the Scottish Ministers requirements. Therefore, this season areas inspected have been 100% compliant for low, medium and high frequency grass cutting compliance.

This highlights that our contractor's work is efficient and effective in meeting the contract specification.

5 New Landscape Areas

No new landscape areas have been added within the STRU SE Unit in 2018/19.

6 Operations to Enhance Biodiversity and Nature Conservation

No specific operations have been undertaken to date to enhance biodiversity, however in the future the following operations will support this:

- Introduction of specimen trees and wildflower areas through the LDP will enhance biodiversity. Route inspection will identify landscape opportunities. All routes where possible.
- Woodland management schemes will ensure that delayed thinning works and underplanting where necessary is achieved through the LDP which will enhance biodiversity and control invasive species. (All routes)
- Woodland management schemes shall be sympathetic to developing informal edges, glades and open spaces to encourage biodiversity and natural regeneration. The proposed regeneration of landscaping within the verges in Lauder village A68, Dovemount in Hawick, A68 Carfraemill Roundabout, A1 Spott Roundabout and A7 Kingsknowe Roundabout provides opportunity to introduce wildflower mixes through seeding and plug planting. Bulb planting and planting opportunities will also contribute to increasing biodiversity within the ethos of the 'Fitting Landscapes' guidance document produced by Transport Scotland.
- Extent of invasive species found within woodland areas is having a devastating impact on biodiversity; however, Amey plan to control invasive species and improve biodiversity through woodland management schemes. (All routes)
- Amey are currently in discussions with several organisations to protect a colony of bee orchids that are currently growing on the grass verge of the A1 near Thorntonloch, East Lothian. These bee orchids are Britain's most northerly and we are ensuring these are preserved. This involved Amey cordoning off the area to protect the plants and grass cutting at relevant times to encourage seed dispersal.
- During 2018/19 Amey carried out vegetation clearance works at Abbotsview and Oaktree SuDS ponds on the A1. The removal of scrub vegetation will allow other desirable vegetation to thrive and add to the biodiversity around the SuDS ponds.

7 Unforeseen Issues and Limitations

The following details the main issues regarding landscape maintenance on the network:

- An outbreak of *Phytophthora ramorum* on larch in the woodland area around Junction 3 on the M8 led Forestry Commission Scotland to issue a Statutory Plant Health Notice in October 2017. The STRU SE falls mostly into the Zone 3 of risk of infection in the UK, where risk is supposed to be least. An outbreak in this zone highlights the need for continuous monitoring of the woodland areas, as further outbreaks could be possible within the trunk road boundary, causing large damage to the larch tree population and woodland habitats. Felling works were completed in financial year 2017/18 and permanent fencing was erected to restrict access to the SPHN designated area. A scheme to monitor regrowth in accordance with the SPHN notice was undertaken in 2018/19 with an ongoing commitment until February 2021 both in terms of time and finance. Through all further route tour inspections, the monitoring of all Larch trees within the network and immediately adjacent to the network will be prioritised with a view to restricting any future spread of the disease. *Rhododendron ponticum* can be a host plant for Phytophthora ramorum, and areas with both plants should be closely monitored. Amey will be carrying out woodland management works on the M876 route in 2018/19. This route has both larch trees and *Rododendron ponticum* growing together and we will be controlling the spread of the ponticum during these works.
- Fast-growing tree species planted for quick-effect are maturing and encroaching on site lines and other species are being deprived of growing space. This has been addressed through woodland management schemes in 2018/19, although it should be noted that this will require a long-term programme of management. This issue is a result of inappropriate planting but also the changing demands of the network with new signage and associated visibility splay restrictions created which were not present when trees were planted. Self-seeding material is also an ongoing issue which will be addressed by coppicing or removal depending on species type and location. Further areas causing concern will be programmed into maintenance works for 2019/20. (All routes)

- Health and safety issues relating to cyclic maintenance at roundabouts are being addressed by proposed design changes to reduce maintenance and provide safety refuges and zones as necessary. A number of roundabouts have been identified as unattractive with poor quality planting offering little interest form or function. Roundabouts offer the opportunity to develop interesting focal point features enhancing biodiversity whilst reducing maintenance obligations and associated risk for maintenance operatives, sustainable and aiding traffic safety. Amey have identified the following roundabouts where design changes will be proposed in 2019/20. A7 Dovemount Roundabout in Hawick, A1 Spott Roundabout near Dunbar, A1 Thistley Cross Roundabout near West Barns and the A68 Carfraemill Roundabout.
- Adjacent landowner vegetation gives cause for concern such as dead trees and encroaching vegetation. Amey will continue to notify adjacent landowners on their responsibility to maintain their vegetation so it does not impact on road users. It is noted that the quantity of ash trees identified with ash dieback continues to increase throughout the network which will increase to number of dead trees requiring attention. The occurrence of significant invasive weeds acquiring management which have spread from adjacent landowners ground. It has been agreed to implement an adjacent landowner ownership notification procedure similar to the adjacent landowner dangerous tree process to attempt to address the core issues particularly for Japanese knotweed and giant hogweed.
- Large areas of invasive and injurious weeds are present along the length of the route. These have been recorded and priority areas identified within the hot spot register for action on an annual basis. Areas of giant hogweed and Japanese knotweed identified near structures and the road verge areas are of concern and have been prioritised for control. The ongoing control and effectiveness of these areas will be monitored regularly. (All routes)
- Areas where scrub and vegetation management has not been addressed previously access has been reduced to allow operatives to undertake litter picking operations out with the verge areas. Access to these identified areas where litter issues have been highlighted will be addressed through the proposed woodland and vegetation management schemes.

- Some issues relating to wood chipping disposal were highlighted during 2018/19 woodland management schemes. In 2019/20 disposal of wood chippings as part of woodland management operations will be in line with contractual requirements and current environmental legislation. Inappropriate log pile locations and construction have been identified and in accordance with the contract will be addressed with the appropriate locations for habitat plies identified and maximised. This will create suitable attractive habitats encouraging species diversity and wildlife within the network green corridors whilst reducing the carbon and financial consequences of removing material off site.

8 Details of significant amendments to the landscape inventory in IRIS (Integrated Roads Information System)

A visual inspection for invasive species was carried out along the Unit during the summer of 2018/19 and all the main areas of infestation are now recorded in IRIS however we continue to update IRIS on a regular basis. Amey have also prepared an Injurious Species Register (See Annex A.2 – Appendix A).

A visual inspection was undertaken along the Unit in March and April of 2018 to record any new areas where bulbs and wildflowers are growing, and any changes will be recorded in IRIS.

9 Additional Information

9.1 Injurious Species Report and Management Plan

See Appendix A

9.2 Pesticide Plan

See Appendix B

9.3 Deer Management Plan

See Appendix C

9.4 Road Kill Records Summary

A summary of the road kill records per route is provided in Appendix D.

9.5 Grassland Report

See Appendix E

Appendix A Injurious Species Report and Management Plan

A.1 Introduction

This document provides an injurious species report for the trunk roads within the 4th Generation Term Contract for Management and Maintenance of the Scottish Trunk Road Network South East Unit (Schedule 3, part 2) as identified below:

- A1 West of A720 Old Craighall Junction, Edinburgh to National Boundary
- A7 Kingsknowe Roundabout, Galashiels to National Boundary
- A68 from A720 Millerhill Junction, Edinburgh to National Boundary
- A702 from A720 Lothianburn Junction, Edinburgh to M74 Junction 13, Abington
- A720 from A1 Old Craighall, Edinburgh to North of M8 J1 Hermiston
- A876 Bowtrees Junction to Kilbagie Roundabout
- A6091 from A7 Kingsknowe Roundabout, Galashiels to A68 Ravenswood Roundabout, Melrose
- M8 J1 Hermiston to M8 DBFO East of Newhouse (J6)
- M9 J1 Newbride to A9 Keir Roundabout, Dunblane
- M80 East of J7 (J4) Haggs to M9 J9 Bannockburn
- M876 from M80 J5 Bankhead to A876
- A977 from A985 Longannet Roundabout to Gartarry Roundabout
- A985 Higgins Neuk Roundabout to M90 J1 Admiralty
- New landscaped area on the M8 at Junction 4a Heartlands is now included on the SE Unit (see Appendix A).

All information recorded for injurious weeds can be viewed within the Integrated Road Information System (IRIS).

A.2 Injurious Species

A.2.1 Injurious Species List

The list of injurious weed species that are to be controlled are contained in the MCDHW Series 3000 sub-clause 3002.1 with the addition of Oil Seed Rape, Rosebay Willowherb and *Rhododendron ponticum*.

Injurious weed species shall include:

- Spear Thistle (Cirsium vulgare)
- Creeping Thistle (Cirsium arvense)
- Curled Dock (Rumex crispus)
- Broad Leaved Dock (Rumex obtusifolius)
- Common Ragwort (Senecio jacobaea)
- Giant Hogweed (Heracleum mantegazzianum)
- Japanese knotweed (Fallopia japonica)
- Oil Seed Rape (Brassica Napus)
- Rosebay Willowherb (Chamaenerion angustifolium)
- Himalayan Balsam (Impatiens glandulifera)
- Rhododendron (Rhododendron ponticum)

A.2.2 Injurious Species – Characteristics/Control Methods

Species	Characteristics	Control Methods
Spear Thistle 	• Seedling plants appear from autumn until April • Biennial – flowers in second year • Purple flowers from July • Spreads only by seed	• Herbicide Spraying either selective or non – selective depending on site • Cutting before July will prevent seed spread but may promote later flowering

Species	Characteristics	Control Methods
Creeping Thistle 	• Perennial plant • Dark pink/purple flowers from July to September • Spreads by creeping roots and airborne seeds	• Herbicide Spraying either selective or non – selective depending on site • Cutting top growth before flowering over several years may reduce spread
Curled Dock 	• Perennial plant but can also behave as biennial or annual • Flowers in early June • Spreads by seed and by vegetative regeneration of underground organs	• Herbicide Spraying either selective or non – selective depending on site • Cutting before mid-June will prevent the spread of viable seed, but will not kill the plant and may promote later flowering
Broad Leaved Dock 	• Perennial plant • Flowers late June • Spreads by seed and by vegetative regeneration of underground organs	• Herbicide Spraying either selective or non – selective depending on site • Cutting before mid-June will prevent the spread of viable seed, but will not kill the plant and may promote later flowering

Species	Characteristics	Control Methods
Common Ragwort 	• Native biennial that can become perennial if cut • This native plant supports many species of wildlife • Bright yellow flowers from late June • The plant contains Pyrrolizidine Alkaloids which are highly toxic to a range of animals including horses and cattle	• Herbicide Spraying either selective or non – selective depending on site • Pulling can be effective if plants are moved offsite • Biological control using the Cinnbar Moth is in the early stages of development in the UK
Giant Hogweed 	• Non- native biennial or perennial that can reach over 3 metres in height • Chemicals in the sap can cause severe skin irritation and blistering • The flowers are white and held in umbels. They appear from late June • Spread by seed, which may remain in the soil for up to 15 years • The plant has thick bristly stems that are often purple blotched	• Herbicide Spraying either selective or non – selective depending on site • Cutting before mid-June will prevent the spread of viable seed, but will not kill the plant and may promote later flowering • Cutting the rootstock at least 10cm to 15cm below ground in March/April can be effective. Young seedlings which appear during the growing season can be hoed

Species	Characteristics	Control Methods
Japanese Knotweed 	• Non-native tall herbaceous perennial with bamboo like stems • Flowers in late summer. Seed is non-viable in the UK • Spread by either fragments of stem or rhizomes (underground root stems) • Can cause structural damage and grow through various surfaces including asphalt	• Herbicide Spraying either selective or non – selective depending on site • Repeated cutting throughout the season for several years may achieve eradication • Biological control using a plant sucker(psyllid) from Japan is currently being tested in the UK and may provide some control
Oil Seed Rape 	• Annual / biennial plant from the cabbage family • Bright yellow flowers from May to August • Spread by seed • Rapeseed is grown to produce animal feeds, biodiesel and vegetable oils	• Herbicide Spraying either selective or non – selective depending on site

Species	Characteristics	Control Methods
Rosebay Willowherb 	• Perennial plant introduced from N. America • Tall plant with pink flower spikes from June, followed by fluffy seed heads • Spread by seed and creeping, fleshy white rhizomes	• Herbicide Spraying either selective or non – selective depending on site • Can be controlled by repeated cutting before seed set
Himalayan Balsam 	• Annual plant native to the Himalayan region of Asia • Can grow to 2 or 3 metres in height • Flowers from June in purple, pink or white helmet shaped flowers • Spread by seed which can be viable for around 2 years • Tends to grow in dense stands along river banks and can impede flow at times of high rainfall	• Herbicide Spraying either selective or non – selective depending on site • Pulling or cutting plants before they flower and set seed can be effective

Species	Characteristics	Control Methods
Rhododendron ponticum 	• Large evergreen shrub with leathery leaves, native to south – west Europe and south –west Asia • Often grows in ecologically sensitive habitats, such as heath, broad-leaved woodland and dunes • Dense growth can considerably alter the structure of the habitat • Flowers are usually pink/purple and occasionally white • Spread by seed	• Cut mature plants and spray stumps with herbicide • Herbicide spraying on foliage of plants below 1.3 metres, either selective or non – selective depending on site • Hand pulling new seedlings • Stem injection of mature plants

A.3 Infestation

A.3.1 Extent of Infestation

Large areas of injurious weeds are present along all routes within the Scottish Trunk Road Network South East Unit. There will now be a residual seed/rhizome bank within the network, resulting in injurious weed infestations recurring throughout the duration of this contract and beyond.

Environmentalists at Amey have now identified over 1,840 individual areas of injurious weed infestations throughout the south-east network. Information on all these areas can be located within the Integrated Roads Information System (IRIS). New areas recently identified include Japanese knotweed and giant hogweed on the M80, giant hogweed and docks on the M8, spear thistle and ragwort infestations on the A720

In addition to the IRIS information on injurious weed infestations, Amey have produced a weed register for each route within the South-East network. An example of the A1 route is shown in Annex A.2. Areas identified as priority hot spots from the register are then passed to our contractor Complete Weed Control for treatment. The priority hot spots will include areas of giant hogweed where it may be encountered by highway maintenance personnel or members of the public, Japanese knotweed where it poses a risk to road surfaces, bridges or in areas where cyclic maintenance work is being carried out, ragwort in areas where there may be livestock adjacent to the highway boundary and other invasive species with high densities.

Rhododendron ponticum species on the network is most prolific on the M876 route. Amey will look at managing these areas during 2019/20 as woodland management schemes are being investigated for this route. Ideally any management of these plants should be carried out before they reach the age of between 10 and 12 years as this will be the optimum time for seed dispersal.

Although there has been no reduction in the number of individual areas of weeds present on the network during 2018/19, we have noticed a reduction in the density of targeted areas.

During 2018/19 and the previous years, several woodland management schemes were carried out to tackle vegetation obscuring road signs and Traffic Scotland cameras. Because of this work we have noticed an increase of invasive species at these locations due to additional light reaching the woodland floor. This will be account for many of the newly identified invasive species on the network.

Any new areas of injurious weed infestations will be identified during route inspections and added to both the weed register and the IRIS database.

A.3.2 Route Infestation

The table below shows the total number of recorded infestations on the network. These infestations could be one plant or multiple plants. Additional information on the infestation densities and coverage is held within the Weed Register and IRIS.

The total number of invasive species recorded in IRIS for the STRU SE Unit in 2018/19 is 1840. In comparison the total number recorded in IRIS for 2017/18 was 1586. This increase of 340 may be due in part to the amount of woodland management works carried out on the network, including the clearance of scrub vegetation. This work has allowed alternative vegetative species to thrive, which will help with biodiversity on the network but may also introduce some invasive species.

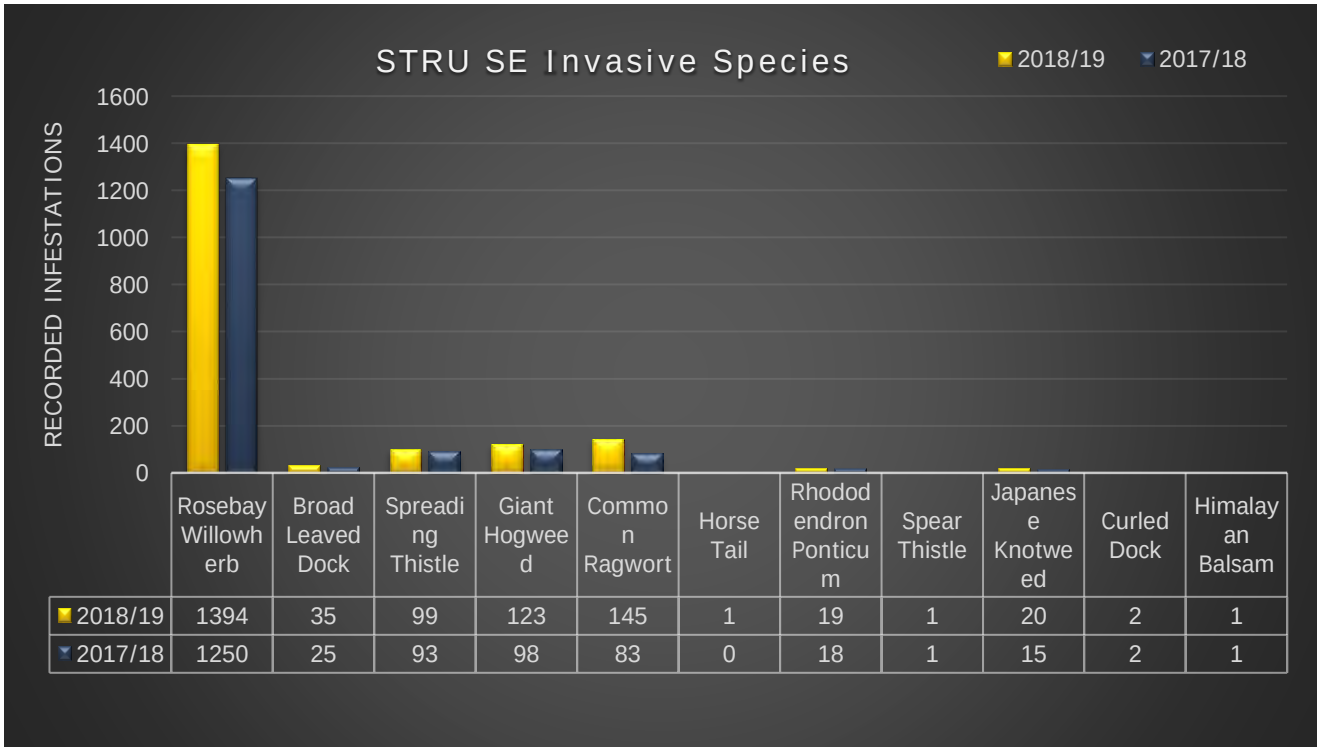
There is greater understanding of invasive species from operational teams and route engineers within the STRU SE Unit. They have received environmental tool box talks to help them identify certain invasive species on the network and this has led to further areas being identified and recorded.

Route	Invasive Species	No. of Recorded Infestations
A1	Giant hogweed	15
	Rosebay willowherb	86
	Japanese knotweed	01
	Common ragwort	37
A7	Rosebay willowherb	77
	Common ragwort	03
	Rhododendron ponticum	01
	Japanese knotweed	01
	Giant hogweed	01
A68	Common ragwort	21
	Rosebay willowherb	103
	Himalayan balsam	01
	Giant hogweed	03
	Japanese knotweed	01
A702	Giant hogweed	01
	Rosebay willowherb	55
	Japanese knotweed	01
	Common ragwort	12
	Horsetail	01
A720	Giant hogweed	43
	Rosebay willowherb	95

Route	Invasive Species	No. of Recorded Infestations
	Japanese knotweed	02
	Common Ragwort	28
A876	Rosebay willowherb	01
	Common ragwort	04
	Spreading thistle	17
A6091	Rosebay willowherb	13
	Common ragwort	01
M8	Giant hogweed	31
	Rosebay willowherb	344
	Japanese knotweed	04
	Common ragwort	12
	Rhododendron ponticum	03
	Spreading thistle	15
	Broad dock	26
	Curled dock	02
M9	Giant hogweed	19
	Rosebay willowherb	437
	Japanese knotweed	01
	Common ragwort	07
	Spreading thistle	02
M80	Rosebay willowherb	40
	Giant hogweed	06
	Japanese knotweed	08
M876	Rosebay willowherb	58
	Common ragwort	03
	Rhododendron ponticum	15
	Giant hogweed	01
A977	Rosebay willowherb	17
	Common ragwort	04
	Spreading thistle	10
	Broad dock	07
	Japanese knotweed	01

Route	Invasive Species	No. of Recorded Infestations
A985	Rosebay willowherb	68
	Common ragwort	13
	Spreading thistle	55
	Broad dock	02
	Giant hogweed	03
	Spear thistle	01
	TOTAL	1,840

Figure A.1: FBOC Route Infestation Comparison Chart



	Rosebay Willowherb	Broad Leaved Dock	Spreading Thistle	Giant Hogweed	Common Ragwort	Horse Tail	Rhododendron Ponticum	Spear Thistle	Japanese Knotweed	Curled Dock	Himalayan Balsam
2018/19	1394	35	99	123	145	1	19	1	20	2	1
2017/18	1250	25	93	98	83	0	18	1	15	2	1

A.4 Management, Monitoring and Review

- Identification, recording and review of areas of known infestation.
- The effectiveness of control measures will be monitored by assessing the reduction in areas of infestation hot spots.
- Regular assessment of trial plots like the A720 Edinburgh Bypass where levels of infestation are high.
- Identifying injurious plant management priorities based on health and safety, ecology and land-use within the network.

A.5 Proposals for the Management of Injurious Species

Despite the spray programme undertaken in 2016 on the main infestation areas along the route, invasive weeds such as giant hogweed and rosebay willowherb still have a great presence in the Unit (see Figures 3 to 10 below). The reduction of these invasive weeds should be one of the main objectives of the Programme for the remainder of the contract.

Route inspections during 2019 will highlight invasive infestation priority areas. These areas will be highlighted for treatment due to the risks associated with them. Some examples of these areas are listed below for the M9:

- M9 - 406: Giant hogweed is growing on an embankment adjacent to Mill Road bridge (B8029 passing over the M9) which is accessible to pedestrians, so there is a potential risk for pedestrians to encounter the weed.
- M9 - 287: Giant hogweed is growing on an embankment adjacent to a pedestrian accessible bridge (Chartershall road over the M9) so there is a potential risk for pedestrians to encounter the weed.
- M9 - 195, 196: Giant hogweed is growing on the embankment close to a bridge accessible to pedestrians (A811, Dumbarton road) so there is a potential risk for pedestrians to encounter the weed.
- M9 - 400: Common ragwort is growing on the verges close to livestock fields. The patch covers a small area of low density, but it supposes a risk for the livestock.
- M9 - 29: Japanese knotweed is growing close to the route, supposing a risk to the structure of the road.

Annex A.2 Weed Register (A1)

STRU SE - INVASIVE SPECIES										
High Density =			Medium Density =			Low Density =		Unrecorded Density =		
INVENTORY No. & STRIP PLAN		ROUTE	SPECIES	Owner	Area (m²)	Density	Adjacent Infestation	Date Of Inspection	IRIS Road Section	IRIS UID
974	A1 sheet 20/w3	A1	Rosebay Willowherb	Scottish Ministers	20	Med	None	10/08/2015	A1 -10132/86	1069855
975	A1 sheet 20/w2	A1	Rosebay Willowherb	Scottish Ministers	4	Med	High	10/08/2015	A1 -10139/05	1069856
976	A1 sheet 19/w3	A1	Rosebay Willowherb	Scottish Ministers	200	Med	Low	10/08/2015	A1 -10139/18	1069857
977	A1 sheet 18/w1	A1	Rosebay Willowherb	Scottish Ministers	16	Med	Low	10/08/2015	A1 -10139/68	1069859
978	A1 sheet 17/w3	A1	Common Ragwort	Scottish Ministers	15	Low	None	10/08/2015	A1 -10139/68	1069860
979	A1 sheet 17/w2	A1	Rosebay Willowherb	Scottish Ministers	80	Med	None	10/08/2015	A1 -10139/68	1069861
980	A1 sheet 14/w3	A1	Rosebay Willowherb	Scottish Ministers	6	Med	None	10/08/2015	A1 -10147/05	1069862
981	A1 sheet 10/w1	A1	Common Ragwort	Scottish Ministers	40	Low	None	10/08/2015	A1 -10147/73	1069863
982	A1 sheet 10/w1	A1	Rosebay Willowherb	Scottish Ministers	15	Med	None	10/08/2015	A1 -10147/73	1069864
983	A1 sheet 8/w2	A1	Rosebay Willowherb	Scottish Ministers	16	Med	None	10/08/2015	A1 -10153/10	1069865
984	A1 sheet 8/w2	A1	Rosebay Willowherb	Scottish Ministers	30	Med	Low	10/08/2015	A1 -10153/10	1069866
985	A1 sheet 6/w1	A1	Common Ragwort	Scottish Ministers	350	Low	None	10/08/2015	A1 -10160/05	1069867
986	A1 sheet 6/w1	A1	Common Ragwort	Scottish Ministers	350	Low	None	10/08/2015	A1 -10160/06	1069868
987	A1 sheet 4/w2	A1	Rosebay Willowherb	Scottish Ministers	100	Med	None	10/08/2015	A1 -10163/10	1069869
988	A1 sheet 3/w2	A1	Common Ragwort	Scottish Ministers	35	Med	None	10/08/2015	A1 -10165/05	1069077
989	A1 sheet 2/w3	A1	Rosebay Willowherb	Scottish Ministers	10	Med	Med	10/08/2015	A1 -10165/45	1069076
990	A1 sheet 2/w1	A1	Giant Hogweed	Scottish Ministers	0.25	Low	None	10/08/2015	A1 -10165/93	1069074
991	A1 sheet 2/w1	A1	Giant Hogweed	Scottish Ministers	1	Med	None	10/08/2015	A1 -10169/05	1069061
992	A1 sheet 2/w1	A1	Giant Hogweed	Scottish Ministers	1	Med	None	10/08/2015	A1 -10169/05	1069062
993	A1 sheet 2/w1	A1	Giant Hogweed	Scottish Ministers	9	Med	None	10/08/2015	A1 -10169/05	1069063
994	A1 sheet 2/w1	A1	Giant Hogweed	Scottish Ministers	150	Low	None	10/08/2015	A1 -10169/05	1069064
995	A1 sheet 1/w1	A1	Rosebay Willowherb	Scottish Ministers	40	Med	Med	10/08/2015	A1 -10175/10	1069067
996	A1 sheet 1/w1	A1	Giant Hogweed	Scottish Ministers	1	Low	None	10/08/2015	A1 -10175/10	1069069
997	A1 sheet 1/w1	A1	Giant Hogweed	Scottish Ministers	1	Low	None	10/08/2015	A1 -10175/10	1069068
998	A1 sheet 1/w2	A1	Giant Hogweed	Scottish Ministers	20	Med	None	10/08/2015	A1 -10169/81	1069056
999	A1 sheet 1/w2	A1	Giant Hogweed	Scottish Ministers	90	Low	None	10/08/2015	A1 -10169/80	1069066
1000	A1 sheet 1/w2	A1	Giant Hogweed	Scottish Ministers	40	Low	None	10/08/2015	A1 -10169/32	1069057
1001	A1 sheet 1/w2	A1	Giant Hogweed	Scottish Ministers	40	Low	None	10/08/2015	A1 -10169/80	1069065
1548	A1 Sheet 12/w3	A1	Rosebay Willowherb	Scottish Ministers	TBC	Low	None	01/05/2018	A1 -10147/40	1579162
1549	A1 Sheet 23/w1	A1	Rosebay Willowherb	Scottish Ministers	TBC	Med	None	01/05/2018	A1 -10128/50	1579165
1550	A1 Sheet 27/w1	A1	Rosebay Willowherb	Scottish Ministers	TBC	Low	None	01/05/2018	A1 -10120/26	1579171
1551	A1 Sheet 29/w2	A1	Rosebay Willowherb	Scottish Ministers	TBC	Med	None	01/05/2018	A1 -10112/45	1579172

Appendix B Pesticide Plan

B.1 Introduction

This Pesticide Plan has been prepared in accordance with the 4th Term Contract for the Management and Maintenance of the Scottish Trunk Road Network South East Unit.

Amey will endeavour to control undesirable species on the network with due consideration to balance the use of chemicals while protecting and enhancing the local biodiversity within the South East Unit.

Contract requirements

The requirements for weed control are contained in MCDHW Series 3000 Clause 3002 and Appendix 30/2.

Where weed control is required, the following methods may be used:

- Contact, translocated or residual herbicide in hard surfaces
- Translocated herbicide during site preparation and near water
- Selective herbicide in verges
- Hand weeding
- Cutting

B.2 Pesticide Records

Table B.1: Pesticides Used Within SE Unit

Year	2018/2019	
Product	Active Ingredient	Use
Amenity Glyphosate 360	Glyphosate	Weed control to tree and shrub planted areas. Total weed control in 'hard' areas. Spot treatment of Injurious Weeds in grass.
Silwet	Adjuvant	Reduce spray volumes of up to 75% and ensure greater coverage of the leaf surface. Also improving rainfast properties of the chemicals applied.

Table B.2: Pesticide use Per Route 2018/19

Route	Glyphosate (l)	Silwet (l)	Total spray volume (l)
A1	118	1.47	2900

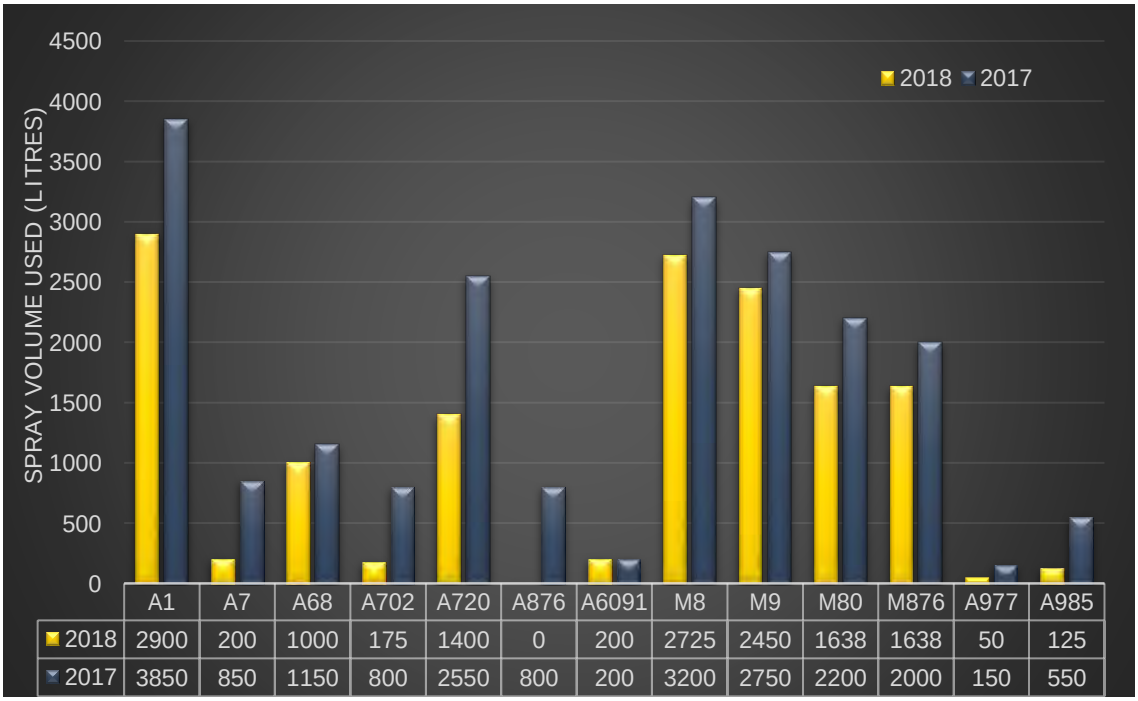
Route	Glyphosate (l)	Silwet (l)	Total spray volume (l)
A7	8	0.1	200
A68	40	0.5	1000
A702	7	0.08	175
A720	67.5	0.84	1638
A876	Incl. M876	Incl. M876	Incl. M876
A6091	8	0.1	200
M8	109.5	1.36	2725
M9	134	1.67	3350
M80	47.5	0.59	1188
M876	47.5	0.59	1188
A977	2	0.025	50
A985	5	0.06	125
TOTALS	594	7.39	14,739

It should be noted that a reduction of 6311 litres of pesticide spray volume was achieved in 2018/19. The overall spray volume was 14439 litres compared to 21,050 litres in 2017/18. This can be seen in Figure B.1 below.

This reduction has primarily been achieved This is primarily due to a decision to change the adjuvant product from Headland Guard to Silwet. Silwet has resulted in reducing the dose rate from 5L per hectare to 4L per hectare and has the potential as a product to reduce spray volumes by up to 75%.

We will continue with similar proposed targets for this year in the hope of reducing pesticides even further across the SE Unit.

Figure B.1 Pesticide Use Comparison



	A1	A7	A68	A702	A720	A876	A6091	M8	M9	M80	M876	A977	A985
2018	2900	200	1000	175	1400	0	200	2725	2450	1638	1638	50	125
2017	3850	850	1150	800	2550	800	200	3200	2750	2200	2000	150	550

B.3 Proposed targets for the potential reduction of pesticides

- Chemical reduction may be achieved through greater calibration techniques, the use of the correct spray nozzle and application in the right conditions. In general, chemical application has been more effective which has reduced the requirement to complete further treatments on areas where treatment has not been successful.
- For giant hogweed: Cutting before mid-June will prevent the spread of viable seed but will not kill the plant. Repeated cutting throughout the season for several years may achieve eradication.
- For Japanese knotweed: Repeated cutting throughout the season for several years may achieve eradication.
- Focusing the action on the main areas recorded in the Weed Database and keeping regular visual inspections during the growing season in order to always count with updated information.
- Investigate the advantages of using Controlled Droplet or Ultra Low Volume Applicators for pesticide reduction and other benefits - See Table 3 below:

Table B.3: Benefits of using CDA or ULV Applicators

CDA or ULV Applicators	
Time Savings – with CDA and ULV systems there are considerable time savings to be made. The efficient low volume chemical application reduces the need for frequent trips back to base to refill. ULV lances are capable of delivering total weed control at a rate of 2 litres per hectare, so you could spray a hectare with 2 fills of the tank. A 15 litre knapsack delivering 200l/ha would take more than 13 knapsacks to spray the same area, assuming 10 minutes per refill that's a time saving of over 2 hours with CDA applicators.	Environmental Benefits – an additional benefit to improved efficacy is to reduce the overall amount of pesticide required. Because none of your pesticide is lost by lock up, drift or poor application then the amount you need to apply can be reduced. ULV Systems can halve the amount of glyphosate applied. 50% less glyphosate means less risk to the environment and less risk to the operator.
Manual Handling – reduced volume equals reduced weight, a full CDA lance system weighs in at around 4kg. CDA & ULV give a significant reduction in manual handling and major improvements in comfort for the user. A full knapsack system could weigh nearer 20kg.	Health and Safety - With no need to carry vast amounts of water the operator is less physically tired by the job and more alert to their surroundings, which could help with improved accuracy of application and improved safety for the operator and the environment.
Drift Reduction – CDA lances produce a controlled droplet which minimises the production of very tiny droplets which are prone to drift. The use of hoods on ULV systems coupled with improved technology ensures that the chemical goes exactly where it is put and pesticides can be applied in windier conditions that through traditional application methods.	Improved Efficiency – the small uniform droplets produced by low volume sprayers coat the target effectively and ensure maximum uptake by the target weed.

CDA or ULV Applicators	
Lock Up – there is no reduction in pesticide efficiency through lockup caused by high levels of lime or variances in Ph because you are not adding any water to the spray mix.	Water Savings – no need to carry large amounts of water saving fuel costs not to mention the cost of the water itself and standpipe hire.
SUD – using low volume systems helps to reduce pesticide usage which is in line with the principles of the Sustainable Use Directive.	Significant Cost Savings – when you add up reduced operator time, reduced water costs, reduced down time due to wind and savings on pesticides it all adds up to significant savings

Appendix C Deer Management Plan

C.1 Background

As of the 16 August 2014, Amey became responsible for the operation and maintenance of the South East Scottish Trunk Road Unit (STRU).

The STRU SE Network covers approximately 885km of road throughout central Scotland, the Lothians and Scottish Borders, including the Edinburgh City Bypass and the M8 motorway between Edinburgh and Glasgow.

Amey is required to produce a Deer Management Plan as part of the Annual Landscape Management Report for the STRU SE contract.

C.2 Deer populations in Scotland

The British Deer Society has been collecting survey data using a standard protocol with data stored as geographical coordinates for each 10km square where at least one sighting of each species has been reported. The resulting Deer Distribution Survey 2011 gives an estimate of the deer species present on the STRU SE network;

- Red deer- sparse
- Sika deer- sparse
- Fallow deer – fairly sparse
- Roe deer – common

C.3 Deer collision hotspots

The collision data was obtained from the active records database managed by Amey's Trunk Road Incident Support Service (TRISS). The total numbers for each road within this network are highlighted in Table C.1.

Table C.1: Total road kills collected from south east trunk roads

Route (STRU SE)	Total deer species road kill (2015-2018)	Total road kill (2015-2018)
A1	120	215
A68	9	15
A7	7	10
A702	8	21
A720	30	159
A985	5	13
A876	8	8
A977	1	1
M8	60	142
M80	22	27
M876	13	15
M9	63	155
A6091	0	0
	* Figures in bold highlight the worst affected areas	

C.3.1 Identifying the need for deer management

As deer have no natural predators sustainable population management needs to be in place to limit their potential impacts on crops, woodland regeneration and biodiversity and to prevent road traffic accidents.

C.4 Overall strategy

The Code is based on the guiding principles identified in Scotland's Wild Deer: A National Approach. These principles promote wild deer management which;

- Integrates deer management and other land-use objectives;
- Uses collaboration to achieve management objectives;
- Uses a geographic scale and timescale best suited to achieving the management objectives;

- Engages and communicates with all relevant interests;
- Uses sound science and the best available evidence;
- Promotes deer welfare.

The Actions are divided into four themes;

- Ensure that wild deer welfare is safeguarded;
- Protect and enhance the environment;
- Support sustainable economic development;
- Support social well-being.

C.4.1 Part A

Amey's Strategy – *General mitigation measures*

Ensure that wild deer welfare is safeguarded

Amey will achieve this by;

- Ensuring network operatives and landowners are aware of, and compliant with the relevant legislation and policies, through Environmental Awareness training.
- Report any incidences of wildlife crime, through liaison with the wildlife crime unit.

Protect and enhance the environment

Amey will achieve this by;

- Providing new habitat to compensate for areas that have been lost. Through habitat assessment and vegetation management.
- Installing tree guards or fencing to protect newly planted woodland or designated areas.

Support sustainable economic development

Amey will achieve this by;

- Increasing the value of deer management activities through work with Deer Management Groups (DMG).

Support social well-being

Amey will achieve this by;

- Educate people about wild deer management, via social media, road signs and posters.
- Liaise with local communities.

Specific mitigation measures

Deer collision hotspots

In high risk areas for deer collision (Figure C.1) the following measures will be considered by Amey, and implemented if required;

- Deer warning signs and speed limit if applicable– Particularly at junctions/roundabouts;
- Deer fencing leading to crossing points;
- Vegetation management. For example, keeping vegetation short on roundabouts and road verges discourages deer from that area, and planting trees back from the carriageway.

Prior to these measures being implemented consultation will be sought from Scottish Natural Heritage (SNH), landowners and DMG's.

C.4.2 Part B

Amey attended a seminar held by the British Deer Society and presented information on how Amey links to deer management and the strategy that's in place. Attending this seminar allowed contacts to be formed with deer management groups, as well as allowing good practice to be shared.

At the end of the year the results of the current strategy and objectives will be reviewed, and further specific mitigation measures made.

C.5 References

Ref 1: The Code of Practice on Deer Management (2011). Scottish Natural Heritage.

Ref 2: SPICe Briefing, Wild deer in Scotland http://www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_13-74.pdf

Ref 3: Langbein. J. (2011). Deer vehicle collisions in Scotland Monitoring Project 2008-2011. The Deer Initiative.Ltd. 2011.

Ref 4: Langbein, J. and Putman, R. J. (2006). National Deer-Vehicle Collisions Project : Scotland 2003-2005. Final report to Scottish Executive. The Deer Initiative, Wrexham.

Ref 5: Putman, R.J., Langbein, J. & Staines, B.W. (2004). Deer and Road Traffic Accidents: A review of mitigation measures costs and cost-effectiveness. Deer Commission Scotland.

Ref 6: SNH (2008). Scotland's Wild Deer – A National Approach. SNH 2008.

Ref 7: National Deer Vehicle Collisions Project: http://www.deercollisions.co.uk/index.html

Ref 8: Wild Deer Best Practice Guidance: http://www.bestpracticeguides.org.uk/

Appendix D Road Kill Data

D.1 Road Kill Data

Amey's TRIS Service collects and records road kill incidents from across the Forth Road Bridge network. Table D.1 below highlights the number of different species collected on all routes, between 2015 and 2018.

The total road casualties collected in year (2018) was 284 compared to 137 in 2017. Deer, badger and fox continue to be the highest recorded casualties on the STRU SE Unit. The routes with the highest recorded casualties are the A1, A720, M9, and M8. The A6091 is the only route on the STRU SE Unit to have no recorded road kill in the last 4 years. The road kill data shows deer are the most common casualty with the species having 44.3% of all road kill in comparison to fox at 26.8%, badger at 21.7% and other species make up the last 7.2%.

The total number of road kills in the last 4 years per route is listed below. This list can be used to identify priority areas for any future mitigation proposals within the STRU SE Unit:

- A1 – 215
- A720 -159
- M9 – 155
- M8 – 142
- M80 – 27
- A702 - 21
- A68 – 15
- M876 – 15
- A985 - 13
- A7 – 10
- A876 - 8
- A977 - 1
- A6091 - 0

Table D.1: Summary of the Road casualties for all the routes on this contract as recorded from 2015 to 2018.

Year	Routes	Badger	Bird	Cat	Deer	Dog	Fox	otter	Other	Swan	Total
2015	A1	14	0	0	19	0	6	0	0	0	39
	A68	0	0	0	0	0	0	0	0	0	0
	A7	1	0	0	3	0	1	0	1	0	6
	A702	2	0	0	0	1	1	0	0	0	4
	A720	5	0	1	4	0	8	0	1	0	19
	A876	0	0	0	2	0	0	0	0	0	2
	A977	0	0	0	0	0	0	0	0	0	0
	M8	4	0	0	9	2	7	0	0	0	22
	M80	0	0	0	2	0	0	0	0	0	2
	M9	4	0	2	9	0	8	0	1	0	24
	A6091	0	0	0	0	0	0	0	0	0	0
	M876	0	0	0	0	0	0	0	0	0	0
	A985	0	0	0	0	0	0	0	0	0	0
	Total	30	0	3	48	3	31	0	3	0	118
2016	A1	20	0	0	35	0	13	0	2	0	70
	A68	1	0	1	2	0	1	0	0	0	5
	A7	0	0	0	2	0	0	0	0	0	2

Year	Routes	Badger	Bird	Cat	Deer	Dog	Fox	otter	Other	Swan	Total
	A702	0	0	0	2	0	0	0	0	0	2
	A720	14	0	3	13	2	24	1	1(raptor), 1 bird	1	60
	A985	0	0	0	0	0	3	0	1 squirrel	0	4
	M876	0	0	0	0	0	0	0	0	0	0
	A876	0	0	0	4	0	0	0	0	0	4
	A977	0	0	0	0	0	0	0	0	0	0
	M8	3	0	2	18	0	12	0	0	1	36
	M80	1	0	1	10	0	1	0	0	0	13
	M9	8	0	3	24	2	8	0	1 bird	0	46
	A6091	0	0	0	0	0	0	0	0	0	0
	Total	47	0	10	110	4	62	1	6	2	242
2017	A1	8	0	0	30	0	3	0	1	0	42
	A68	0	0	0	4	0	0	0	0	0	4
	A7	0	0	0	1	0	0	0	0	0	1
	A702	3	0	0	3	2	0	0	0	0	8
	A720	6	0	1	4	0	15	0	1	0	27
	A876	0	0	0	1	0	0	0	0	0	1

Year	Routes	Badger	Bird	Cat	Deer	Dog	Fox	otter	Other	Swan	Total
	A977	0	0	0	0	0	0	0	0	0	0
	M8	4	0	0	10	1	7	0	0	1	23
	M80	0	0	0	4	0	0	0	0	0	4
	M9	5	0	1	14	0	4	0	1	2	27
	A985	0	0	0	0	0	0	0	0	0	0
	M876	0	0	0	0	0	0	0	0	0	0
	A6091	0	0	0	0	0	0	0	0	0	0
	Total	26	0	2	71	3	29	0	3	3	137
2018	A1	15	0	0	36	1	10	2	0	0	64
	A68	3	0	0	3	0	0	0	0	0	6
	A7	0	0	0	1	0	0	0	0	0	1
	A702	4	0	0	3	0	0	0	0	0	7
	A720	15	0	1	9	0	28	0	0	0	53
	A876	0	0	0	1	0	0	0	0	0	1
	A977	0	0	0	1	0	0	0	0	0	1
	M8	7	0	1	23	1	29	0	0	0	61
	M80	2	0	0	6	0	0	0	0	0	8
	M9	19	2	0	16	0	18	0	2	1	58

Year	Routes	Badger	Bird	Cat	Deer	Dog	Fox	otter	Other	Swan	Total
	M876	1	0	0	13	0	1	0	0	0	15
	A6091	0	0	0	0	0	0	0	0	0	0
	A985	0	0	0	5	0	2	0	2	0	9
	Total	66	2	2	117	2	88	2	4	1	284

Appendix E Grassland Report

E.1 Introduction

Grassed areas, in the various categories recorded, make up the largest single landscape element within the trunk road boundary and the management and maintenance of these areas requires the commitment of a considerable level of resource during each annual period.

This document provides an overview of the broad condition of the grassed areas within the Unit and ensures that the appropriate maintenance operations undertaken meet the objectives of the area as recorded in the Landscape Strategy for the 4th Generation Term Contract for Management and Maintenance of the Scottish Trunk Road Network South East Unit (Schedule 3, Part 2).

There is a recognition that discrepancies between previous generation term contract requirements for grass cutting frequencies and grassland classifications will be consolidated into agreed terminology concerning classifications of grassland, appropriate grass cutting frequencies and methodology to minimise risk to operatives whilst maximising the opportunities available to contribute to the principles of the Fitting Landscapes policy document creating sustainable grasslands.

E.2 General Objectives

E.2.1 Safety

This relates to general safety of the road network for users and for safety regarding maintenance operations.

The vegetative growth must not impede:

- Sight lines at junctions, access points and bends
- Visibility signs, and signals
- Footways and accesses

The vegetative growth must not encourage:

- A conflict between road users and wildlife such as deer crossing

The maintenance operations programme has to comply with the general health & safety measures, but also through the introduction of certain changes in the character of the grasslands (like areas left to naturalise with wildflowers) maintenance activities can be reduced and this can be considered in areas where the maintenance of the sward would result in operatives being at significant risk such as steep slopes and unstable ground with

poor access and working in high risk areas adjacent to junctions and blind corners etc. particularly where no vehicular restraint systems are located (VRS). Integration within the wider landscape

This objective is to enhance the "sense of place" and to provide character to the landscape in the Unit. The features of the grassed areas in the verges and embankments of the routes should integrate with the features of the adjacent land, as well as being maintained in a way that favours the enjoyment of the landscape as a whole. The assessment of the existing landscape character and in particular designated special areas of conservation (SAC) and special protection areas (SPA) adjacent to the unit which have been identified in Appendix A will significantly influence any proposed alterations to the existing grass management plan. This will ensure linkage to existing environments creating habitat corridors and integrating the road network into the wider landscape creating a sense of identity, arrival and departure.

E.2.2 Encouragement of Ecological Diversity

The grassed areas on the verges and embankments play a main role in the biodiversity of the routes such as:

- Possibility of providing the right conditions for different native herbaceous species to grow (including several species of native orchids), Potential value as corridors and shelter for small mammals and invertebrates in extensive agricultural lands whilst complying with safety restrictions associated with sightlines, reflecting the local environment and restricting potential conflict between road users and larger mammals.
- Provide habitats and a valuable food source to encourage pollinators such as butterflies, moths, hoverflies and bees contributing to the Amey A to Bee Initiative. This will in turn encourage greater numbers and diversity throughout the food chain.

The maintenance management is a decisive factor on the biodiversity of the grasslands, so this objective should be given full consideration at every stage of Landscape Management and especially when developing opportunities for improvement. A review of current maintenance operations will be undertaken to establish where the frequency and methodology of grassland maintenance could be altered to establish enhance habitat and increase biodiversity without increasing operator risk and investment requirements. Management of soil fertility and invasive species will require careful consideration if

alterations in grassland management are to be positive rather than being undertaken to reduce required financial, plant and personnel resources.

E.2.3 Visual Interest and Amenity

This objective relates to road users and those people living, working or visiting close to the network.

The road verges are highly visible and directly influence how the public perceive each route. A well maintained strip or swathe is the most direct way in which the grasslands can provide visual amenity to the roads, but there are other opportunities for grassland areas to meet this objective such as:

- Areas where bulbs or wildflowers are growing in the verges (bulbs like daffodils are appreciated by the public, but they are not as beneficial for pollinators and do not provide the biodiversity value that native wildflowers can such as cowslips).
- Junctions or roundabouts with large areas of grass where alternative planting could be introduced to add some visual interest and also reduce the maintenance creating a sense of place. Wildflower seed mixes are especially advisable for encouraging wildlife and reducing maintenance, but other options like slow growing varieties of grass or different types of ground cover plants like sedums would also reduce maintenance and provide great visual amenity. There is a requirement to recognise and address the differing environments that we expect good grass sward to establish and thrive to reduce possible erosion, unsightly areas and discourage pernicious weed growth. Knowledge of localised soil conditions, pollution, salt pollution, and light levels associated with overhead structures, such as bridges infrastructure is essential to ensure the correct seed mix for the right location is introduced. Poor grass growth and associated weed infestations are highlighted as detrimental issues throughout the unit area. Existing spraying techniques and application methodology will be investigated with alternative controlled droplet application techniques utilised to reduce chemical usage and minimise spray drift which leads to unsightly dead and bare areas.

E.3 General description

The grassland areas within the verges and embankments of the routes form an almost continuous feature that is interconnected throughout the unit. These grassed areas are

the front line adjacent to the carriageways, and are directly exposed to pollution coming from the network resulting from vehicle fumes, possible oil, fuel run off and salt from winter road maintenance. This is generally evident from the condition of these areas as they act as an environmental buffer for the areas beyond.

Apart from areas that are maintained on a low, medium or high regime (such as verges, bus stops, laybys and junctions etc) the rest of the grassland areas within the unit are defined within the "general grass" or "rough grassland" category. Further consolidation of the grassland categories and establishment of the cutting regimes relating to Transport Scotland's Integrated Road Information System (IRIS) is on-going in conjunction with identifying possible changes to be considered in grassland management. This will increase biodiversity, minimise risk to operatives and contribute to the aims and principles of Fitting Landscapes ensuring sustainability creating where possible a natural equilibrium with the wider environment.

Additional locations will be incorporated into IRIS upon the successful handover of new infrastructure projects to ensure continued grassland management in compliance with the 4th Generation Term Contract.

Details on the condition of these areas are provided under each route as the Unit is too large geographically to consider in general.

E.4 Specific route areas

E.4.1 A1 West of A720 Old Craighall Junction, Edinburgh to National Boundary

Any local specific objective

The main local objective for this route is the reduction of giant hogweed. There are high density infestations of *Heracleum mantegazzianum* (giant hogweed) along the route. A review of the larger *Ulex europaeus* (gorse) areas will take place with a view to management of the potential fire risk if identified and where appropriate the frequency of grass cutting will be re-evaluated.

Description of the grassland features

Table E.1: Grassland Features A1

Grassland Features	Description
Specific Grassland areas	This is a long route that runs through different kinds of landscapes. The condition of the grassed verges is characteristic of the surrounding landscape, which mainly comprises of arable farmland valleys, hills (where the route passes through steep embankments) or coastal. Appendix A provides details of significant designations of adjacent landscapes. There is a high volume of traffic on this route and the verges are exposed to its effects.
Current maintenance regime	The central reservation, slip roads and verges are maintained on a low frequency basis with 3 cuts per year. In the village of Grantshouse there is an area of medium frequency cut, with 7 cuts per year. According to the Cyclic programme, all laybys, bus stops, junctions and roundabouts are also maintained on a medium frequency regime with 7 cuts per year. This programme also includes a low maintenance regime with 1 cut per year for the wide areas. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations, in the period from April to October.
Issues arising from current maintenance regime	There are several areas along the route where gorse is spreading through the grass areas and encroaching into the verges (close to Abbotsview Roundabout) and also some areas were the hedges are overgrown. The giant hogweed growing at the north end of the road suggests that continuing pesticide treatments are one of the principal requirements on the route.
High amenity grass areas	None along this route.
Amenity grass areas	There is an area of amenity grass within the village of Grantshouse. This is a wider grassed verge on the southbound

Grassland Features	Description
	carriageway of the route that separates the settlement from the road.
General grass	Most of the grassland areas along this route fall under this category. This applies to all the grassed verges that are under a low maintenance regime. The condition of these areas varies along the route, but issues like erosion and the presence of weeds are common.
Rough grass	These are all the areas of unmanaged grass that are beyond the maintained strip. They are often partly encroached by gorse and bramble, different herbaceous plants and also invasive species.
Specific issues	 There are areas with a high density population of giant hogweed close to Old Craighall Roundabout. The giant hogweed is identified within the Invasive Weed Hotspot Register with a view to reducing the density of weed growth over the growing season. Erosion of the soil is an issue along the route and this has a direct effect on the quality of the swathe. The erosion seems to be caused by pollution from the road, but also from the quality of the soil itself. Investigations will be undertaken into the suitability of alternative grass seed mixes which may establish in these locations reducing the erosion. Working in partnership with maintenance operatives and sub-contractors for spraying to establish alternative control droplet techniques and good practice to reduce unnecessary weed killing and spray drift. The extent of the gorse areas will be established and proposals to control its spread reducing any potential fire risk will be prepared for consultation.

Grassland Features	Description
Sward health	 Sward health is variable along the route. Within flat verges it appears in a very poor condition: the grass is very sparse and the growth is weak, quite often yellowing. The edge of the verge presents signs of being sprayed with pesticide, affecting the grass, leaving patches of bare ground that leave room for other species to grow, mainly weeds. Alternative control droplet application techniques are being investigated and are detailed within the Injurious Species Report and Management. The ground shows signs of salt splashing, erosion or compression. Litter is also present in the verges, especially on the laybys. In  large laybys separated from the carriageway and slightly sloping verges, the grassed areas appear to be in better condition but a variety of weeds intermingle with the grass. There are some wider areas of grass at the end of the route (border with England) where the grass presents a better state of health. In these areas there is a thick and uniform ground cover, the sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and the verges are free from litter.
Sight line areas	Sight lines are being retained by the implementation of the low maintenance regime.

Grassland Features	Description
Weed content	 Common ragwort and rosebay willowherb are covering large areas of the grassland along this route. There are isolated areas of giant hogweed all along the route, but the major concentration can be found close to the Old Craighall Junction and also where the road passes over the River Esk. A pesticide treatment regime is currently in place along the route. The giant hogweed identified within the Invasive Weed Hotspot Register and subsequently the density of the infestation is being reduced.
Erosion / over-run	This route has a high HGV percentage traffic, and there are many areas where the grassed verges are flat and present signs of over run. This is most commonly found in laybys. There are some eroded areas in some of the steep embankments where the soil is sandy and loose in appearance. Many verges also present signs of erosion from pollution such as salt spray and alternative salt tolerant seed mixes are therefore currently being investigated.
Bulbs	There are 484 m2 of daffodil bulbs within grassed areas along this route and therefore the timing of the first grass cut is programmed accordingly.
Specific opportunities for amending grass maintenance regime.	There are some opportunities to introduce wildflowers or planting that would reduce the need for maintenance and encourage biodiversity: • Enhancement planting in Burnmouth Roundabout. Enhancement planting in Thistly Cross Roundabout. It should be noted that there will still be a requirement to maintain the sight lines and therefore undertake appropriate grassland management at this location.

Grassland Features	Description
	• Enhancement planting in Spott Roundabout, amelioration of visibility splay soil and reseeding of a verge mix with wildflower seeding between any areas of planting and the visibility verge. • Enhancement planting in the wider areas in the border with England. • Specimen Tree and Wildflower Planting Opportunity between Pease Bay & the A1107 Jct. linking to existing landscape characteristics. • On embankments north and southbound, grass cutting will be reduced out with sightlines between established woodlands to allow for natural regeneration and habitat creation.

E.4.2 A7 Kingsknowe Roundabout, Galashiels to National Boundary

Any local specific objective

The reduction of the injurious species is the main objective for this route, especially as it passes through farmland. Common ragwort, recorded along this route, can be fatal if ingested by certain livestock. A survey of all amenity and general grass areas will be undertaken to highlight possible locations where the frequency of grass cutting can be reduced reducing risk for operatives and increase the opportunity for biodiversity and natural regeneration.

Description of the grassland features

Table E.2: Grassland Features A7

Grassland Features	Description
Specific route grassland areas	Due to the length of this road, the characteristics of the verges on this road vary with the ones of the landscape around. In comparison to other similar routes of the Unit, like the A702 or the A68, the grasslands along this route are quite healthy.
Current maintenance regime	The verges are maintained on a low frequency basis with 3 cuts per year. In the village of Ashkirk there is an area of medium frequency cut, with 7 cuts per year, and there are areas of high frequency with 14 cuts per year in Kingsknowe, Selkirk and Hawick. According to the proposed cyclic programme, all laybys, bus stops, junctions and roundabouts are maintained on a medium frequency regime with 7 cuts per year. This programme also includes a low maintenance regime with 1 cut per year for the wider areas. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations, during the period from April to October.
Issues arising from current maintenance regime	There are some areas of encroachment where the road is narrow and passes through woodlands. There are also areas where existing vegetation has encroached obstructing signage and restricting visibility.

Grassland Features	Description
High amenity grass areas	There are some areas of high amenity grass in the villages of Kingsknowe, Selkirk and Hawick.
Amenity grass areas	There are some areas in the village of Ashkirk, and also at some laybys, bus stops, junctions and roundabouts.
General grass	This applies to all the grassed verges that are under a low maintenance regime. The condition of these areas varies along the route, but issues like erosion and the presence of weeds are common. The designated landscape grass areas will be reviewed to determine whether the current frequency of cuts is appropriate for the locality.
Rough grass	Areas of unmanaged grass that are beyond the maintained strip. These areas will also be reviewed to establish as to whether the current maintenance regime is appropriate and in context with the surrounding landscapes and maximises the potential for biodiversity.
Specific issues	The presence of invasive species like rosebay willowherb or common ragwort. These species have been identified in the Injurious Species Report and Management Plan.
Sward health	 In general, the health of the sward along this route seems better than other routes throughout the Unit, but it varies in relation to the surrounding landscape. The sward should be managed to develop characteristics which will complement the existing adjacent landscape character along the route in accordance with the principles of the Fitting Landscapes policy document.

Grassland Features	Description
	Most of the grassed verges along the route present a good state of health comprising of a dense sward with a variety of weeds and herbaceous plants growing within. There are some signs of salt spray and erosion on the edges, especially where the road is flat, and where there are filter drains or kerbs that are treated with pesticides. The presence of litter is low, apart from the laybys, where there are also signs of over-run. Litter collection activities to be targeted at locations where vehicles stop such as laybys and road junctions. A higher grass cutting frequency may be appropriate in locations of higher littering to aid collection activities. Verges adjacent to woodland, hedgerows or stone walls are often very narrow and steep, and the soil appears eroded and bare or covered with weeds. In the damper areas of the route and also on the slopes, there are some reeds growing through the grass areas. 
Sight line areas	The current maintenance regime is sufficient to retain all sight lines in accordance with contractual requirements.
Weed content	Rosebay willowherb is the main invasive weed along this route, growing in numerous large patches of high density, but with low infestation toward adjacent land. Senecio jacobaea (common ragwort) has also been recorded, but in lower numbers.
Erosion / over-run	 There is evidence of over-run at some of the laybys (layby in the south end of Hawick) and some bends where the road is narrow and the visibility low. Erosion

Grassland Features	Description
	is very common on the flatter verges that are lined by filter drains. The maintenance of these implies the use of pesticides that affect the grass on the verges, and then the soil is washed out by the rain. Investigations are ongoing in regard to pesticide application methodology highlighted within the Injurious Species Report and Management Plan.
Bulbs	 There are many areas along this route with clumps of Narcissus species (daffodil) bulbs; Primula vulgaris (primrose) and Ranunculus ficaria (lesser celandine) have also been spotted. Hyacinthoides non-scripta (bluebells) is growing in some slopes adjacent to the verges of the route.
Specific opportunities for amending grass maintenance regime.	There was an opportunity to carry out some enhancement planting in the central part of Northbridge Roundabout in Hawick as highlighted in the 2016 Grassland Report. This work is programmed to be undertaken in 2017/18 under the A7 Dovemount Phase 2 works. On steep embankment areas where a reduction of grass cutting is proposed to enhance biodiversity, create clearings for deer and reduce operator risk. Natural regeneration will be encouraged out with sight lines. These will be in locations where changes in maintenance will complement the surrounding landscapes in accordance with the principles of the Fitting Landscapes policy document.  In autumn 2016 in partnership with Hawick Rotary Club the Galalaw roundabout was planted with 5000 bulbs for 'Purple for Polio'. This has improved

Grassland Features	Description
	the landscape visual amenity creating a sense of place and increasing biodiversity.

E.4.3 A68 from A720 Millerhill Junction, Edinburgh to National Boundary

Any local specific objective

The reduction of invasive species is one of the main objectives for this route.

Description of the grassland features

Table E.3: Grassland Features A68

Grassland Features	Description
Specific route grassland areas	This is a long route that passes through different landscapes, with varying types of grassed areas along the road. As this road tends to be narrow and winding, issues like overrun and erosion of the grass and soil are very common on the verges.
Current maintenance regime	According to the calendar of activities for 2016 the verges are maintained on a low frequency regime with 3 cuts per year. There are areas of high frequency regime with 14 cuts per year in the villages of Lauder, Earlston, St. Boswells and Jedburgh. According to the proposed Cyclic programme, all laybys, bus stops, junctions and roundabouts are also maintained on a medium frequency regime with 7 cuts per year. This programme also includes a low maintenance regime with 1 cut per year for the wide areas. Weed control operations are undertaken twice per year along kerbs, filter drains and central reservations.
Issues arising from current maintenance regime	The cutting regime on this route is sufficient to keep the grassed verges under control. Problems like erosion or poor sward health could be improved at some point by reseeding with a salt tolerant mix possibly providing the opportunity to reduce the number of cuts.
High amenity grass areas	There are some areas of this kind of grass in villages and towns: Lauder, Earlston, St. Boswells and Jedburgh.
Amenity grass areas	These are located at laybys, bus stops, junctions and roundabouts.
General grass	The low maintenance 1.2m wide strips of verge along the route belong to this category.

Rough grass	Areas of unmanaged grass that are beyond the maintained strip. These areas are found on the embankments, quite often overtaken by some encroaching gorse and brambles. In some areas of the route (the closest stretch to the Border) reeds are also growing in these areas. Unmanaged grass reduces the risk to operatives, increases the opportunity for biodiversity and can complement existing landscape characteristics adhering to the principles of Fitting Landscapes policy.
Specific issues	 The over run of the verges by HGV's is one of the main issues for the grasslands of this road, especially in laybys but also in close bends. Where erosion and overrun is significant a costed programme of grass re-enforcement solutions could be considered.
Sward health	The sward health along this route varies as the landscape changes, but in general it is found to be medium to poor. The low and narrow verges suffer from road splashes, erosion and over run, so there are some stretches were the ground is bare or the grass intermingles with large numbers of weeds. The swathe growing on steep embankments is also suffering erosion as the soil is wind-blown, and is quite often encroached by gorse and Rubus fruticosus (brambles).

Sight line areas	 There are some visibility issues at Carfraemill Roundabout, where the Prunus lusitanica (laurel) hedge in the centre is overgrown. Pruning work has been programmed for this location 2017-18. The grass maintenance regime itself seems sufficient.
Weed content	Rosebay willowherb is the main weed along this route, growing in numerous large patches of high density. Common ragwort has been recorded, but in lower numbers. Where ragwort is located adjacent to grazing land control and eradication will be prioritised over other areas. There are some areas with giant hogweed in the embankments at the north end of the route. 
Erosion / over-run	Over run is a common issue along the route, especially severe in laybys where the vehicles pull up over the and in close bends. There is significant erosion on the very flat verges which have been worn out and also in some of the steeper embankments. If appropriate the steeper embankments will no longer be cut and therefore encourage the natural regeneration of scrub and tree cover. If appropriate this proposed alteration in grassland maintenance will discourage further erosion.
Bulbs	There are some areas of daffodils. Wildflowers like cowslip spread in the roundabout and embankments at the north end of the route, with lupins are also evident. The timing of grass cutting will be dictated by bulb management best practice.

Specific opportunities for amending grass maintenance regime.	There are some measures that would enhance biodiversity within the roadside verges, and also reduce the maintenance. For example: • The timing for the cuttings: reducing the cuttings from three to twice per year, making the first one around April and the second after the seed of the wildflower has set, around August/September. This will encourage the growth of wild flowers. There is a possibility with this measure that the grass to be cut in August/September would be longer and require different machinery. This could initially mean an increase of the costs, but could reduce maintenance works long term.

E.4.4 A702 from A720 Lothianburn Junction, Edinburgh to M74 Junction13, Abington

Any local specific objective

This route passes amongst agricultural land where livestock is kept. A specific objective for this route is the effective management of invasive and injurious weeds, to avoid the growth of common ragwort on the verges, which could be fatal for the livestock.

Description of the grassland features

Table E.4: Grassland Features A702

Grassland Features	Description
Specific route grassland areas	The grassed areas of this route grow mainly along very narrow verges. These verges are usually limited by walls, retaining walls, hedgerows or woodland, and quite often they grow on a steep slope, which generally makes the grass grow in a very poor condition.  There are few wider areas of grassland along this route. They appear to be unmanaged, with high levels of weeds growing on them and some reed in the dampest zones. Opportunities could be investigated to introduce wetland wildflower mixes and associated grassland management regimes contributing to increasing biodiversity and encouraging pollinators.
Current maintenance regime	The verges are maintained on a low frequency regime with 3 cuts per year. There is an area of high frequency cutting regime with 14 cuts per year in the village of Carlops. According to the proposed Cyclic programme, all laybys, bus stops, junctions and roundabouts are also maintained on a medium frequency regime with 7 cuts per year. This programme also includes a low maintenance regime with 1 cut per year for the wide areas. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations.

Grassland Features	Description
Issues arising from current maintenance regime	 This road is in general quite narrow and winding, which makes maintenance works particularly difficult. The grass cutting is carried out by a boom mower with a flail head. This does not provide a very regular finish but it is the safest option for the operatives. Rosebay willow herb grows in big patches of rough grass areas. There are some areas where trees encroach onto the verges.
High amenity grass areas	There is an area of high amenity grass in the village of Carlops.
Amenity grass areas	All laybys, bus stops, junctions and roundabouts.
General grass	Apart from the exceptional areas of high amenity and amenity grassland, most of the grasslands along this route are the 1.2m wide strip of verge maintained on a low frequency regime
Rough grass	These are the wider areas of unmanaged grass that are beyond the maintained strip. In this route, they are uncommon and not very wide, sometimes just a narrow strip between the maintained part of the verge and the adjacent hedgerow or wall. Rosebay willow herb grows frequently in these areas, and in damper areas reed can also be found.
Specific issues	 Due to the character of this road, winding and narrow, over run is a repeated problem along the verges. This leads to erosion problems that are also frequent in some of the steep and narrow embankments along the road, especially those under walls from adjacent properties. Hedgerows

Grassland Features	Description
	and trees from the woodland areas encroach onto the verges in several points. A priority programme of cutting back and clearance focusing on sight lines will be investigated. Invasive weeds like rosebay willow herb grows in the rough grass areas quite often spreading from adjacent land and adjacent land owners will be contacted with a view to working in partnership to control invasive species. The number of laybys provided along the road appears to be low due to the narrow verges and the low visibility. The two roundabouts in Abington, at the south end of the route, appear in a neglected state with over-grown shrubs in the central area, the sward being overtaken by weeds (docks mainly) and the chipped edge of the roundabouts presents severe signs of over-run.
Sward health	The verges of this road are very narrow and the sward is in a generally poor state of health. This appears to be due salt spreading, over run by vehicles and shade from the trees or poor soil. As a result there are large patches of bare ground. Appropriate preparation and alternative seed mix proposed to prevent weed infestation will be investigated. The sward presents a better state of health where the verges run along farm fields, but in these areas there are many weeds growing, like rosebay willow herb or docks. The amount of litter on the verges is generally low, apart from the laybys. Concentration on litter management, maintenance hotspots or deterrents for littering and possible educational initiatives could be considered.
Sight line areas	The grass maintenance regime is sufficient to keep the sight line areas under control, although some schemes have been undertaken in this route to favour visibility, such as cutting trees back. Further identification and subsequent prioritisation of cutting back schemes to be undertaken. The winding nature of the route means visibility is the major safety issue of the route.
Weed content	The main weed along the grasslands of this route is rosebay willow herb, followed by docks that grow in several areas There are some small patches of other invasive species like common ragwort,

Grassland Features	Description
	Japanese knotweed or giant hogweed. Prioritisation treatment of ragwort adjacent to grazing areas, hogweed near the public and Japanese knotweed near areas of disturbance will be considered. Grass cutting frequency and timescales of cutting will aid and contribute to invasive species management.
Erosion / over-run	Over run on the verges is a significant issue along this route. The visibility is poor and the carriageways are narrow, so many vehicles over run the verges. This problem is greater in the laybys, where some vehicles pull up over the verge, and in the many bends. There are problems of erosion where the verges are very steep and narrow and also on the flat verges lined by filter drains, kerbs or barriers, because the maintenance required for these features implies the use of pesticides that lessen the quality of the grass and the soil. Investigations into alternative grass seed mixes to maximise the potential for grassland sword regeneration and establishment will be undertaken.
Bulbs	 Snowdrops and some daffodils are growing along this route. There are crocuses growing on the most northerly roundabout next the A720, however these were planted by Braids Rotary Club.
Specific opportunities for amending grass maintenance regime.	Redevelop the landscaping at Abington Roundabout. Enhancement planting at A720 Junction with A73. Introduce alternative grass mixes to address bare areas of ground to deter weed encroachment and visual issues associated with erosion and overrun. Where access to areas of ground out with visibility splays and immediate verges raises concerns in regards to risk consideration will be given to extending areas of non-maintenance of grasslands to encourage natural regeneration and grassland biodiversity.

E.4.5 A720 from A1 Old Craighall, Edinburgh to North of M8 J1 Hermiston

Any local specific objective

The further reduction of the giant hogweed (Hermiston Junction) is the main objective for this route and is prioritised within the Weed Hotspot Register within the Injurious Species Report and Management Plan.

Description of the grassland features

Table E.5: Grassland Features A720

Grassland Features	Description
Specific route grassland areas.	This route passes along the edge of Edinburgh, and for the major part is lined with rock cuttings or screening vegetation, with some open views from the westbound carriageway towards the Pentland Hills. The grassed verges are very exposed to the pollution from the intense traffic of the route, and there are also areas of rough and unmaintained grass on the embankments, where weeds and wildflowers grow.
Current maintenance regime	The central reservations and slip roads are maintained on a low frequency regime with 3 cuts per year, to be carried out in the period from March until October. According to the proposed Cyclic programme, all laybys, bus stops, junctions and roundabouts are maintained on a medium frequency regime with 7 cuts per year. This programme includes a low maintenance regime with a frequency of 3 cuts per year for the verges, possible reduce this to two grade separated junctions and central reserves, and 1 cut per year for the wide areas. There is also a 3 times per year plan for weed control operations to be carried out in April, July and September.
Issues arising from current maintenance regime	There are many areas of bare ground, possibly due to the maintenance operations for barriers, kerbs and filter drains, which include the treatment with pesticides. These areas have now been overtaken by different weeds and herbaceous plants. (PIC 1020114) The lack of hard shoulders on this route makes

Grassland Features	Description
	maintenance works on the verges especially difficult and therefore investigation will be undertaken to establish whether the cutting regime can be reduced further. Giant hogweed appears to be re-growing so the continued treatment of this infestation with pesticides is required.
High amenity grass areas	None.
Amenity grass areas	None.
General grass	All the maintained grassed areas along this route fall within this category.
Rough grass	 These are the wider areas of unmanaged grass that are beyond the maintained strip of grass, and can be generally found on the embankments. Cowslips can be found growing in these areas, and they are quite often overtaken by brambles and scrub. The management of brambles to benefit cowslips and wildflowers will be incorporated into any proposed cutting back works for this unit.
Specific issues	There are several points along the route where trees, hedges or scrub encroach onto the grassland. The presence of giant hogweed in Hermiston Junction is one of the main issues of this route.
Sward health	The grassed areas along this route present a poor to medium state of health, erosion is a problem on the steep bankings, under barriers and along filter drains and kerbs that have been treated with pesticide where the ground is now bare.

Grassland Features	Description
	 In general, the grass is quite sparse and the growth is weak, quite often yellowing. There are large patches of bare ground that leave room for other species to grow, like weeds or moss in the shadiest areas.
Sight line areas	The current maintenance regime is sufficient to keep all the sight line areas in a good state.
Weed content	Giant hogweed covers large areas along this route, especially at Hermiston Gait Roundabout, and also between Gilmerton Junction and Sheriffhall Roundabout. Rosebay willowherb and common ragwort grow all along the road. Japanese knotweed is less common but also present. These weeds are currently under treatment regime with information recorded in the weed hotspot database.
Erosion / over-run	There are signs of erosion on the verges under barriers, and along kerbs and filter drains, due to the maintenance needed for this features. There are also erosion issues in some of the steepest embankments where the rock cutting can be seen.
Bulbs	There is a large area of cowslips within the rough grass on the east bound approach to Dreghorn Junction. The current grassland management regime is being reviewed with a view to encouraging additional species to enhance biodiversity.
Specific opportunities for amending grass maintenance regime	There is an opportunity to carry out an enhancement planting at Hermiston Gait Junction, where the introduction of wildflowers would reduce the need for maintenance as well as encourage biodiversity. This could be undertaken once giant hogweed is eradicated from this junction. On significant embankments the grass cutting frequency will be removed out

Grassland Features	Description
	with sightline areas to allow for natural regeneration and habitat creation whilst reducing risk associated with undertaking grassland management operations.

E.4.6 A876 Bowtrees Junction to Kilbagie Roundabout

Any local specific objective

The reduction of the populations of invasive species is the main objective for this route.

Description of the grassland features

Table E.6: Grassland Features A876

Grassland Features	Description
Specific route grassland areas	The grassed verges along this route are narrow strips that open over the surrounding coastal landscape. As the route travels away from the coast, it also goes through some embankments and hedgerows where the grassed areas become wider either side.
Current maintenance regime	According to the proposed Cyclic programme, all the grasslands along this route are maintained on a low regime, with a frequency of 3 cuts per year for the verges, grade separated junctions and once per year for the central reservation and wide areas. There is also a 3 times per year plan for weed control operations.
Issues arising from current maintenance regime	No major issues.
High amenity grass areas	None.
Amenity grass areas	None.
General grass	All the maintained grassland areas on this route fall within this category, and they can be found in the 1.2m wide strip of verge either side of the road.
Rough grass	There are some areas along the route of unmanaged grassland adjacent to the maintained strip of grass on the verges.
Specific issues	The growth of invasive species on the verges of the road and erosion of the soil.

Grassland Features	Description
Sward health	The sward on these verges presents a poor state of health in the areas closest to the Forth, the grass is very sparse and there are many signs of erosion. It is proposed that soil should be tested and possible over seeding with a coastal verge mix may be appropriate depending on soil analysis. Grass sword becomes a bit thicker as the road goes inland, but it is still intermingled with herbaceous plants and small weeds.
Sight line areas	The current low maintenance regime is sufficient to keep sight line areas under control.
Weed content	Spreading thistle is the main weed along the grasslands of this route, growing together in some points with broad leafed dock, common ragwort and rosebay willow herb.
Erosion / over-run	There are signs of erosion in the grassed verges on this route, especially under barriers and along filter drains and kerbs, all features that have been treated with pesticide and where the grass has disappeared. The re-evaluation of the grassland pesticide regime as highlighted within the Injurious Species Report and Management Plan will establish as to whether alternative application methodology can contribute to a reduction of grass loss.
Bulbs	There are no areas of bulbs recorded for this route. Consideration will be given to introducing of wildflower and bulbs where appropriate linking to the Amey A to Bee initiative.
Specific opportunities for amending grass maintenance regime.	Opportunity to introduce wild flowers in some roundabouts, reduce the maintenance works and enhance biodiversity in: • Kilbagie Roundabout By introducing the hemi-parasite yellow rattle, the need for grass cutting would decrease, and it would also favour the growth of native species. Assessments will be made into the suitability of locations along this route including roundabouts, embankments and junction areas bearing in mind opportunities may be restricted due to the requirement to

Grassland Features	Description
	remove arisings. Rhinanthus minor (Yellow rattle) may not be appropriate near intensive grazing land. Grassland management will need to reflect the requirement for grassland of low to medium fertility and cut 40-50mm before sowing in autumn. Further grass cutting should not then occur between April and mid-July.

E.4.7 A6091 from A7 Kingsknowe Roundabout, Galashiels to A68 Ravenswood Roundabout, Melrose

Any local specific objective

The reduction of rosebay willowherb along this route is the main objective.

Description of the grassland features

Table E.7: Grassland Features A6091

Grassland Features	Description
Specific route grassland areas	This is a fairly short route, and the grassed verges along it present quite uniform characteristics. They are rather flat and narrow, limited by hedgerows or stone walls as it approaches the urban area of Melrose. There is one area where the grassed verges are wider and include a pedestrian walkway. This is locally known as "the Golden Mile" because of the daffodil bulbs growing alongside.
Current maintenance regime	The verges of this road are maintained on a low frequency regime with 3 cuts per year. There is an area maintained on a medium frequency regime of 7 cuts per year in the village of Melrose, and an area maintained on a high frequency regime with 14 cuts per year in Kingsknowe Roundabout. According to the proposed Cyclic programme all laybys, bus stops, junctions and roundabouts are maintained on medium frequency regime with 7 cuts per year. This programme includes a low maintenance regime with a frequency of 3 cuts per year for grade separated junctions and central reserves, and 1 cut per year for the wide areas. There is also a 3 times per year plan for weed control operations.
Issues arising from current maintenance regime	The current maintenance regime is sufficient for grassed areas however the main issue for maintenance here is safety because the verges of the road are quite narrow and there are very few laybys. The maintenance should be therefore undertaken with a boom mower with flail head. Assessments should be

Grassland Features	Description
	undertaken as to whether grass cutting frequency can be reduced further bearing in mind the risks to operatives.
High amenity grass areas	Kingsknowe Roundabout.
Amenity grass areas	All laybys, bus stops, junctions and roundabouts, and the village of Melrose.
General grass	These areas are formed by the maintained strip of verge along either side of the road.
Rough grass	There are some areas of unmanaged grassland adjacent to the verges, where scrub is growing.
Specific issues	The main issues along the verges of this road are the large incidences of rosebay willowherb.
Sward health	The sward health along this route can be defined as good as grass grows in large clumps that cover the ground in quite a uniform way. Weeds and herbaceous plants of different kind intermingle over the grassland area and there is some litter on the verges. There are some signs of salt splashing and erosion on the edges.
Sight line areas	The low maintenance regime is sufficient to keep sight line areas under control.
Weed content	The main weed along the grasslands of this route is rosebay willowherb, covering large patches of medium and high density. Common ragwort has also been recorded, but in lower numbers.
Erosion / over-run	There are some signs of vehicle damage on the verges of this route, mostly on leaving Ravenswood Roundabout.
Bulbs	There is a long area of planted daffodils along this route, at the village of Melrose, locally known as "The Golden Mile". Cowslips are also growing along this route.

Grassland Features	Description
Specific opportunities for amending grass maintenance regime.	A scheme has been completed to remove the scrub from the grasslands in order to enhance the existing daffodil population (The Golden Mile). There is an opportunity for some enhancement planting and maintenance reduction in Tweedbank Roundabout. The introduction of native wildflowers in the roundabout would reduce the need for grass maintenance as well as it would encourage biodiversity and provide some visual interest.

E.4.8 M8 J1 Hermiston to M8 DBFO East of Newhouse (J6)

Any local specific objective

The main objectives for this route are the reduction of invasive species and investigate a reduction in grass cutting frequencies to encourage further biodiversity and natural regeneration. It should be noted that existing tree cover is currently under treat from Dutch elm disease and extensive evidence of Ash Dieback.

Description of the grassland features

Table E.8: Grassland Features M8

Grassland Features	Description
Specific route grassland areas	 This is one the busiest routes within the unit and this is reflected on the grassed verges. The route runs mainly through agricultural lands, mostly lined by embankments covered with rough grass or woodland. There are hard shoulders all along this route, and these are lined by a flat strip of maintained grass that merges with the embankments or is limited by adjacent land.
Current maintenance regime	The hard shoulders and central reservations are maintained on a low frequency regime with 3 cuts per year. According to the proposed cyclic programme, Junction 4 at Newbridge is maintained on medium frequency regime with 7 cuts per year, and the wide areas are under a low frequency regime with 1 cut per year. Weed control operations are undertaken twice per year along kerbs, filter drains and central reservations.
Issues arising from current maintenance regime	There are some areas where the grass has almost disappeared and weeds have overtaken: • On the embankments under the main structures. Alternative shade tolerant grass mixes are currently under investigation. • Under some barriers, and other areas that must have been sprayed or trimmed very low.

Grassland Features	Description
	There are some areas where the adjacent hedgerows and woodland are encroaching into the grassland.
High amenity grass areas	None
Amenity grass areas	Junction 4 at Newbridge.
General grass	Most of the grassed areas of this route fall under this category.
Rough grass	 Grassland areas on the verges beyond the 1.2m strip do not appear to be under any cutting regime and can be considered rough grass. These areas generally merge with the adjacent scrub or woodland. Weeds are growing mainly on rough grass areas and where they merge with the adjacent land. In the shadiest parts grass has been overtaken by moss.
Specific issues	 On the embankments of Junction 4A there are signs of some excessive spraying around the young trees that has spread over the grassland area. This issue is likely to be due to historic spraying regime. Rosebay willow herb spreads along the route and there is a giant hogweed infestation around Hermiston Gait. The populations of Japanese knotweed on this route are also an issue.
Sward health	The grassed verges that are closer to the hard shoulders and the central reservation present a generally poor state of health. The grass is very sparse and the growth is weak, quite often yellowing. There are large patches of bare ground that leave room for other species to

Grassland Features	Description
	grow, like weeds or moss in the shadiest areas. The ground presents signs of salt splashing and erosion or compression, and there is litter on the verges.
Sight line areas	 The current maintenance regime is sufficient to keep all sight line areas under control. It should be noted that in various locations vegetation requires attention with a possible number of schemes to be identified to address sightline issues and removal of non-emergency dead trees.
Weed content	The main weed growing along this route is rosebay willow herb, forming large patches of varying density and with different levels of infestation towards the adjacent land. Broad leafed dock spreads all along the route. Many patches of common ragwort grow close to the rosebay willow herb. Ragwort adjacent to grazing land will be prioritised for eradication within the Injurious Species Report and Management Plan. Giant hogweed appears in clumps all along the route, especially around Hermiston Junction 1 and there are also some patches of Japanese knotweed.
Erosion / over-run	The grass verges present signs of erosion along the hard shoulders, where the grass has disappeared, probably due to salt spray from the road. The grass is very sparse and there are also signs of erosion under barriers, along filter drains and kerbs and also close to some structures on the road.
Bulbs	There are some small patches of snowdrops and lesser celandine growing along the westbound carriageway between the River Almond and the Union Canal.
Specific opportunities for amending	The maintenance of the embankments of Junction 4 need to be taken in consideration due to the excessive spraying that is being undertaken. Some aspects of the mowing regime could be re-

Grassland Features	Description
grass maintenance regime.	considered in order to enhance biodiversity in the roadside verges, and at the same time to reduce the maintenance. These are mainly the following:
	Reducing the number of cuttings by readjusting the timing: reducing the cuttings from three to twice per year, making the first one around April and the second after the seed of the wildflower has set, around August/September. This will encourage the growth of wild flowers. There is a possibility with this measure that the grass to be cut in August/September would be longer and need different machinery to cut it. Within areas that match the character of landscapes out with the LMA upon steep slopes, grass cutting could cease or be reduced encouraging biodiversity and reducing operator risk. This could increase and connect areas of wildflower and out with the LMA creating linkages and wildlife corridors.
	Dependant on the soil characteristics, where appropriate differing wildflower mixes can be considered. This will increase the opportunity for pollinators contributing positively to the ecosystem/ food chain.
	Grass growth regulators could mean a significant reduction in the maintenance operations and costs. They could be introduced as a trial in some areas to start with that are identified to be areas of greatest risk to operators. • The use of grass growth regulators may have significant improvements on the whole maintenance programme, reducing the need for mowing and therefore the risks for operatives and road users, as well as the disturbance to the wildlife habitats in the verges of the roads. This means that it would also reduce the costs and the carbon footprint of the programme. • Grass growth regulators work by diverting the vertical growth of the plant to more lateral growth and greater root development, which is also a favourable effect. They do not impact other plants, and have no effect on insects, worms or soil microflora.

Grassland Features	Description
	• Their application implies a very low hazard risk for the operatives, and it could also be sprayed at the same time as any herbicide needed. • In low maintenance verges with a frequency of 3 cuts per year, two applications of a grass growth regulator, one around April and the other around September, could reduce the need of mowing to one per year, around June.

E.4.9 M9 J1 Newbride to A9 Keir Roundabout, Dunblane

Any local specific objective

The local objective for this route is to reduce invasive species due to the large areas of *Rhododendron ponticum* and identify locations where grass cutting frequency can reduced or eliminated to increase biodiversity and natural regeneration.

Description of the grassland features

Table E.9 - Grassland Features M9

Grassland Features	Description
Specific route grassland areas	 This route is mostly lined by embankments of different height. These embankments are normally covered by areas of rough grass or woodland, and there is also a flat 1.2m wide strip of grass along the hard shoulder that is under the maintenance regime. These are the general grass areas along this route, and they normally appear in a pretty deteriorated condition due to its exposition to the splashes from the road or the maintenance of other elements like filter drains and barriers.
Current maintenance regime	 The hard shoulders and central reservations are maintained on a low frequency regime with 3 cuts per year. The Newbridge Roundabout is maintained on medium frequency regime with 7 cuts per year, and the wide areas are under a low frequency regime with 1 cut per year. The grassland areas on the embankments of the main junctions and also adjacent to structures are also maintained on a low frequency regime. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations.

Grassland Features	Description
Issues arising from current maintenance regime	 There are some encroachment of trees and Rhododendron ponticum from the adjacent woodland. The development of a sightline pruning programme will be undertaken for consideration which will include the recommendations for the removal of certain rhododendron species.
High amenity grass areas	None.
Amenity grass areas	There are some areas in Newbridge Junction maintained under a medium frequency regime of 7 cuttings per year. An assessment will be undertaken to establish as to whether the frequency of cuts can be reduced.
General grass	Most of the grassed areas of this route are part of this category, being mainly found in the 1.2m maintained strip of verge along the route.
Rough grass	 These are the areas of grasslands that are not under any maintenance regime, they are normally on the embankments and it is mainly on these areas where the weeds grow. Moss is overtaking the rough grass areas in some of the North-facing embankments. Consideration can be given to the possible introduction of yellow rattle and wildflower if appropriate.
Specific issues	A filter drain renewal scheme has been undertaken between Junction 9 and Bannockburn, on the northbound carriageway, causing damage to the turf and the embankment. This has a direct effect on the visual amenity of the area. Consideration will be given as to whether reinstatement works may be appropriate and beneficial.

Grassland Features	Description
Sward health	 In general the sward along this route presents a good level of health but there are some areas where this deteriorates, such as verges where erosion and salt splashing from the road bring the sward into a very poor condition.
Sight line areas	The low maintenance regime is sufficient to keep all the sight line areas under control.
Weed content	 The main weed within the grassland areas of this route is rosebay willow herb, appearing in large patches of varying density with low or no infestation towards the adjacent land. Broad leaf dock spreads all along the route and common ragwort has also been recorded. Several clumps of giant hogweed have been recorded along the route, becoming more abundant as the route progresses east, especially at Junction 10 Craigforth. Rhododendron ponticum, which is a severe infestation in the woodlands along the road, is starting to encroach the grassland areas in some areas.
Erosion / over-run	There are some severe signs of erosion on the grassland areas where there have been filter drain works. Appropriate reinstatement and reseeding requires consideration.
Bulbs	There are several patches of snowdrops dotted along the route.

Grassland Features	Description
Specific opportunities for amending grass maintenance regime.	 No specific opportunities have been identified for the grassland areas, although there are several measures that could enhance biodiversity and reduce some of the maintenance works through the reduction in grass cutting frequencies where appropriate and the introduction of wildflower mixes dependant on individual locations and characteristics. It should also be noted that a number of dead elm trees have been recorded during site visits and a programme of felling will be established.

E.4.10 M80 East of J7 (J4) Haggs to M9 J9 Bannockburn

Any local specific objective

The local objective for this route is to reduce invasive species.

Description of the grassland features

Table E.10 - Grassland Features M80

Grassland Features	Description
Specific route grassland areas	 This is a very short route within the Unit that runs mostly through steep wooded embankments. These embankments are often supported by retaining walls, making the strip of grass that extends along the hard shoulder look quite poor. The hard shoulder is also lined by a filter drain either side of the route, leaving very little space and very bad conditions for the grass verge to grow. The main grassed areas on this route are therefore those on the embankments, and they are considered wide areas for maintenance.
Current maintenance regime	The hard shoulders and central reservations are maintained on a low frequency regime with 3 cuts per year. According to the proposed cyclic programme, the wide areas are under a low frequency regime with 1 cut per year. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations. Some edging works have been recently undertaken.
Issues arising from current maintenance regime	No major issues have been identified.
High amenity grass areas	None.
Amenity grass areas	None.

Grassland Features	Description
General grass	These are the areas of low maintenance grass growing along the hard shoulders. They appear in poor condition along this route.
Rough grass	The rough grass areas are those growing on the embankments and also over retaining walls where they are often overtaken by weeds, ivy or moss.
Specific issues	There is an area on the embankment where the grassland has been damaged by vehicle overrun and compression due to some tree removal works.
Sward health	 The sward presents generally a good health on the embankments where the grass covers the ground thickly, presenting a uniform aspect. The sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and the verges are clean. There are some exceptional places where it has been overrun, or over the retaining walls, where it is often in a very poor condition.
Sight line areas	The low maintenance regime is sufficient to keep all the sight line areas under control.
Weed content	The main weed growing within the grassland areas of this route is rosebay willow herb. There are some areas with severe levels of giant hogweed infestation, especially at the Bannockburn Junction. Broad leaf dock spreads all along the route, and there is also some Japanese knotweed. Control of identified weeds is addressed in the Injurious Species Report and Management Plan.

Grassland Features	Description
Erosion / over-run	There are some areas of erosion, especially on the steepest embankments and on the verges, where weeds are overtaking grass.
Bulbs	There is a total of 35m^2 of daffodil bulbs and 10m^2 of snowdrops on the route.
Specific opportunities for amending grass maintenance regime.	Grass cutting regimes to be assessed with a view to reducing the number of cuts on embankments or the removal of grass maintenance completely. This may significantly reduce risk to operatives and encourage natural regeneration and biodiversity. Possible introduction of wildflower mixes within certain localities will also be considered.

E.4.11 M876 from M80 J5 Bankhead to A876

Any local specific objective

Due to the numbers of invasive species growing on this route and he recent changes on legislations, we aim to reduce these numbers as one of the main objectives for this route.

Description of the grassland features

Table E.11 - Grassland Features M876

Grassland Features	Description
Specific route grassland areas	The grasslands of this route can be found growing on verges and embankments and also in roundabouts. They are generally in good condition.
Current maintenance regime	The central reservations are maintained on a low frequency regime with 3 cuts per year. According to the proposed Cyclic programme, verges, grade separated junctions, and any strimming works needed (under barriers, close to structures) are also under a low frequency regime with 3 cuts per year, and the wide areas are under a low frequency regime with 1 cut per year. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations.
Issues arising from current maintenance regime	There is some encroachment from adjacent woodland and scrub into the grassland.
High amenity grass areas	None.
Amenity grass areas	None.
General grass	These are the maintained grassland areas on the verge and roundabouts of this road.
Rough grass	These are the areas of grass growing on the embankments that are under a minimum or no maintenance regime. They often

Grassland Features	Description
	present high numbers of weeds, brackens and brambles as they merge with the woodland.
Specific issues	Populations of invasive species along the route like rosebay willow herb and common ragwort.
Sward health	The health of the grass is good in general on this route, except where there are gabion retaining walls. In these locations, the soil seems to be much more exposed to erosion, and the weeds are overtaking grass.
Sight line areas	The current maintenance regime is sufficient to keep all the sight line areas under control.
Weed content	Rosebay willow herb is the main weed along the grassland areas of this route. Common ragwort is also present, but in lower numbers. There is a severe infestation of Rhododendron ponticum along this route, but it mainly affects the woodland areas. Broad leaf dock is also quite common on this route, presenting an especially high population at Bowtrees Roundabout.
Erosion / over-run	There are some signs of erosion on the embankments that descend towards the carriageway.
Bulbs	There is an area of over 120m^2 of daffodil bulbs at Junction 8 with the M9. There are sparse daffodils and primroses growing in the rough grass areas.
Specific opportunities for amending grass maintenance regime.	Opportunity to introduce wild flowers, reduce the maintenance works and enhance biodiversity in Bowtrees Roundabout by introducing the hemi-parasite yellow rattle, the need for grass cutting would decrease, and this would also favour the growth of native species. There is a large population of broad docks in this roundabout that would need to be treated before introducing a suitable wildflower seed mix.

E.4.12 A977 from A985 Longannet Roundabout to Gartarry Roundabout

Any local specific objective

The reduction and eradication of the invasive species populations is the main objective for this route.

Description of the grassland features

Table E.12 - Grassland Features A977

Grassland Features	Description
Specific route grassland areas	 This is a rather short route that goes through an urban area for roughly half of its extent, and through agricultural land for the other half. There are grassed areas in the village of Kincardine with amenity character and they are maintained by Fife Council. The rest of the grasslands on this route can be found on the verges, which are generally narrow and lined by hedgerows or stone walls, so grass does not grow in a good condition. At some points, the verges are a bit wider, leaving space for some areas of rough and unmaintained grass, where infestations of invasive species can be found, like rosebay willowherb and area of Japanese Knotweed recorded in May 2017.
Current maintenance regime	The hard shoulders are maintained on a low frequency regime with 3 cuts per year. According to the proposed cyclic programme, verges and strimming works are also under a low frequency regime with 3 cuts per year, and the wide areas with 1 cut per year. There are also areas of medium frequency cutting regime, in all laybys, bus stops, junctions and roundabouts. Weed control operations are undertaken twice per year in kerbs, filter drains and central reservations.

Grassland Features	Description
Issues arising from current maintenance regime	 There is some encroachment from the woodland in the narrow verges (between Kilbagie Roundabout and Kincardine). The sward on the low maintenance verges is in very poor condition due to erosion. It does not seem to be under any kind of treatment.
High amenity grass areas	There are some areas of high amenity grass on this route, as it passes through Kincardine. They appear to be maintained by Fife Council.
Amenity grass areas	All laybys, bus stops, junctions and roundabouts.
General grass	These areas can be found on the low frequency maintained strip of the verges. In this route, this strip is very narrow and lined by stone walls, which sometimes results in the disappearance of grass in favour of small weeds and different herbaceous plants.
Rough grass	There are some areas of rough grass beyond the maintained strip of the verges, often intermingled with brambles and invasive species like rosebay willow herb and one area of Japanese knotweed.
Specific issues	Encroachment from the woodland and the presence of invasive species like rosebay willow herb and Japanese knotweed.
Sward health	The health of the sward on this route is related to the maintenance regime. In the high amenity areas in Kincardine and also in the roundabouts along the route, the grass covers the ground thickly, presenting a uniform aspect. The sward grows strong and the colour is bright. The presence of weeds growing amongst the grass is very low and there is no litter. In the rest of the verges, the health of the sward is rather poor, the grass has almost disappeared, leaving large patches of bare ground that leave room for other species to grow, like weeds or moss in the shadiest areas.

Grassland Features	Description
	This situation seems to come from the narrowness of the road and also because these verges are often lined by stone walls, leaving them very exposed to salt splashes from the road and erosion.
Sight line areas	The low maintenance regime is sufficient to keep all the sight line areas under control.
Weed content	Rosebay willow herb and spreading thistle are the main weeds on the grassland of this route. Broad dock and common ragwort appear in some areas mixed amongst them. The presence of Japanese Knotweed identified in May 2017 will be included in the Injurious Species Report and Management Plan.
Erosion / over-run	There are signs of erosion along the narrow verges. Over-run is not a common problem on this road, probably due to the speed limit and the kerbs that line the whole route.
Bulbs	There are some areas of daffodils growing on the verges of this route, covering a total of over 112m^2.
Specific opportunities for amending grass maintenance regime.	Opportunity to introduce wild flowers in some roundabouts and reduce the maintenance works and enhance biodiversity in Gartarry Roundabout dependant on topsoil fertility test results. A reduce grass cutting regime can be incorporated out with any visibility splays.

E.4.13 A985 Higgins Neuk Roundabout to M90 J1 Admiralty

Any local specific objective

Reduction and eradication of injurious species like common ragwort and giant hogweed. As appropriate recommendations, will be made to reduce grass cutting frequencies to encourage biodiversity and natural regeneration within areas where risk to operatives is significant.

Description of the grassland features

Table E.13 - Grassland Features A985

Grassland Features	Description
Specific route grassland areas	 This route runs mainly through agricultural lands, although it also crosses the forest of Devilla and some villages. The verges of this road are in general narrow and flat, lined by fences, hedgerows or woodland. In the flattest areas there are filter drains, and as they are treated with pesticide this affects the grass and causes erosion and sparseness. They are also exposed to salt splashes from the network and over-run from vehicles.
Current maintenance regime	The maintenance regime is low for the verges and strimming operations with 3 cuts per year. In the wide areas the frequency is of 1 cut per year. For laybys, bus stops, roundabouts and villages the maintenance regime is medium with 7 cuts per year. There is also a 3 times per year plan for weed control operations.
Issues arising from current maintenance regime	No major issues.
High amenity grass areas	None.

Grassland Features	Description
Amenity grass areas	All areas maintained on a medium cutting regime can be considered within this category, but they seem to be maintained by Fife Council.
General grass	All the grassed areas on the low maintained 1.2m strip of the verges fall within this category.
Rough grass	These are the areas of unmanaged grass that are beyond the maintained strip. They tend to merge with the adjacent hedgerows or woodland and it is on these areas where the populations of invasive species grow.
Specific issues	 Part of the route, between High Valleyfield and the junction with B9037, is fence lined, and the grass has been severely damaged and eroded by spray from the road.
Sward health	The sward presents in general acceptable health, the grass grows in big clumps that cover the ground in quite a uniform way, but many of these clumps are yellowing at the base. Weeds and herbaceous plants of different kind intermingle over the grassland area and there is litter on the verges. There are also signs of salt splashing and erosion on the edges, some patches damaged by deflected vehicles, and some areas of mole hills. In the amenity areas and roundabouts (Oakley Roundabout) the sward presents a good level of health due to the higher maintenance regime.
Sight line areas	The medium maintenance regime is sufficient to keep all the sight line areas under control. There is a small area of introduced wild flowers on this route in the junction with the route B9037, but this area is now being reduced due to sightline visibility issues.

Grassland Features	Description
Weed content	The grassland areas of this route contain a high proportion of invasive species, with the main two being spreading thistle and rosebay willow herb. Common ragwort, giant hogweed and broad dock are also present.
Erosion / over-run	There are some signs of erosion along the edge of the verges, possibly due to the weed control operations. There are also some are areas of vehicle damage, especially in close bends where the vehicles may run over the verges in order to improve visibility.
Bulbs	Some patches of snowdrops have been identified along this route, and daffodils grow mainly in the roundabouts.
Specific opportunities for amending grass maintenance regime.	Opportunity to reduce the maintenance on some of the roundabouts by introducing native wild flowers: Although the current maintenance regime is effective at Oakley Roundabout, by introducing appropriate wildflower mixes the need for grass cutting could be decreased, and may also favour the growth of native species out with identified sight lines. Rosyth Roundabout: enhancement planting with suitable native wild flower that could reduce the need for maintenance and encourage biodiversity