A9 DUALLING
PERTH TO INVERNESS

A9 Dualling Programme

Strategic Environmental Assessment (SEA)

Environmental Report

June 2013

TRANSPORT SCOTLAND
The Scottish Government

A9 Dualling Programme

Strategic Environmental Assessment

Draft Environmental Report

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Transport Scotland

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Document history

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This document has been issued and amended as follows:

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1.0	May 2013	Discussion Draft	J Fox	D Bell	
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Limitations

Halcrow Group Ltd has been instructed to provide a Strategic Environmental Assessment of the A9 Dualling Programme on behalf of Transport Scotland.

The assessment is based on the information that has been made available at the time of publication and this Environmental Report is presented as a consultation document. Any subsequent additional information arising during the public consultation period may require revision or refinement of the conclusions.

It should be noted that:

- The findings within this report represent the professional opinion of experienced environmental scientists, sustainability consultants and other specialists. Halcrow does not provide legal advice and the advice of lawyers may also be required.

- All work carried out in preparing this report has utilised and is based upon Halcrow's professional knowledge and understanding of current relevant European Union, UK and Scottish standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and may cause any conclusions to become inappropriate or incorrect. Halcrow does not accept responsibility for advising of the facts or implications of any such changes.

- This report has been prepared using factual information contained in maps, documents and data prepared by others. No responsibility can be accepted by Halcrow for the accuracy of such information. All maps, illustrations and other sources of data are credited where appropriate.

- Every endeavour has been made to identify data sources, where appropriate.

- This report represents the independent views and recommendations of the consultants conducting the analysis, and may not necessarily reflect the opinions held by Transport Scotland.

SEA ENVIRONMENTAL REPORT – COVER NOTE PART 1
To: SEA.gateway@scotland.gsi.gov.uk
PART 2
An Environmental Report is attached for:
A9 Dualling Programme
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PART 4
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03/06/2013

A9 Dualling Programme SEA – Key Facts

Responsible Authority	Transport Scotland – MTRIPS Directorate
PPS Title	A9 Dualling Programme
What prompted the PPS	Commitment to complete A9 dualling by 2025 made through the Government's Infrastructure Investment Plan, December 2011
PPS Subject	Transport Infrastructure
Period covered by PPS	Delivery programme to target completion by 2025
Frequency of updates	Live programme – ongoing review
Area covered by PPS	The A9 corridor between Perth and Inverness
Purpose and/ or objectives of PPS	The A9 Dualling Programme aims to: 1. Improve the operational performance of the A9 by: – Reducing journey times – Improving journey time reliability 2. Improve safety for motorised and non-motorised users by: – Reducing accident severity – Reducing driver stress 3. Facilitate active travel in the corridor 4. Improve integration with Public Transport Facilities 5. Deliver completion by 2025
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1 Introduction

1.1 A9 Dualling Programme

The A9 is the main north-south trunk road between Perth and Inverness and beyond, vital to the economy and communities of the north of Scotland. The Strategic Transport Projects Review (STPR) and its Strategic Environmental Assessment (SEA), undertaken in 2008, considered a range of transport interventions for the A9 corridor between Perth and Inverness, including road and rail infrastructure, safety improvements and public transport options. The STPR recommended a combination of road and rail network improvements; identifying that dualling the A9, as a priority trunk road intervention, would be expected to provide a significant contribution to the Government's Purpose of increasing sustainable economic growth.

In December 2011, the Cabinet Secretary for Infrastructure and Capital Investment launched the Government's Infrastructure Investment Plan (IIP) which includes a commitment to complete A9 dualling, between Perth and Inverness, by 2025.

Dualling the A9 represents one of the largest infrastructure projects in Scotland's history; it is the longest trunk road in Scotland with the Perth to Inverness section forming 177 kilometres (~110 miles) of the total. The combined total for existing dual carriageway sections between Perth and Inverness is approximately 48 kilometres (~30 miles), and the sections to be dualled total around 129 kilometres (~80 miles).

Transport Scotland has begun the preliminary design, and public engagement/ consultation work, required to ensure that the relevant statutory processes and permissions are completed, and to enable delivery of design and construction projects within the programme timeframe to 2025.

1.1.1 A9 Dualling Challenges and Benefits

The nature of the topography along the A9 means that the Highland Mainline Railway, National Cycle Route 7, power lines and the A9 itself all generally follow and share the same route through the hills. Additionally, the watercourses of the Tay and Spey rivers share the same constrained space for much of the route. The topography also forms the basis for the Cairngorms National Park, National Scenic Areas and other landscape designations. The area alongside the route is also rich in terms of natural and cultural/ historic environment designations, visitor attractions and recreational activities and the A9 provides a major access route to these resources.

The high level aspiration for full dualling of the A9 is that it should be designed to deliver a Category 7, All Purpose Dual Carriageway (D2AP) road, wherever possible, with the following general features:

- Full grade separation of junctions to remove at-grade junctions;
- Grade separated junctions to provide direct links, over or under, the A9 for non-motorised user crossing/ access;
- No gaps in the central reserve, to prevent right-turns across carriageways;
- Hard shoulder strips at least 1m width;
- Route, signage and lighting design to minimise overall visual impact.

There are a significant number of challenges to be addressed, including:

- Addressing accident severity;
- New bridges and/ or major bridge widening;
- Proximity of the Highland Mainline Railway and public utilities infrastructure in constrained areas;
- Lay-by and rest area provisions;
- Accessibility for non-motorised users (NMU), including facilities for pedestrians, cyclists and equestrians, and links to public transport;
- Access to recreation, including the Cairngorms National Park; and
- Rock cuttings, high carbon soils and minimising the impacts of construction.

Once complete, dualling the A9 is anticipated to provide the following benefits:

- Improved road safety and reduction in accident severity;
- Improved journey times and reliability;
- Safe crossing points to link non-motorised user routes and public transport facilities;
- Improved access to tourist and recreation sites, including key views/ viewpoints;
- Improved trunk road transport infrastructure supporting sustainable economic growth, and resilience to climate change.

1.2 Preliminary Route-wide Studies

Two strategic studies covering Preliminary Engineering Services (A9 PES – Jacobs) and Strategic Environmental Assessment (A9 SEA – Halcrow) are being undertaken. Together they are working to deliver a route-wide assessment which clearly identifies and collates environmental and engineering constraints, issues, risks and opportunities to inform later, more detailed design and project level environmental assessments.

This SEA aims to be comparable with the first stage of environmental assessment for a road project and has been developed in line with the national Design Manual for Roads and Bridges (DMRB) guidance standard. DMRB Stage 1 requires the identification of environmental issues along a proposed road section (or alternative corridors). Typically, the road section considered through the Stage 1 process will be of limited length and not to the scale proposed for A9 dualling (i.e. totalling 129 kilometres of single carriageway).

The outputs of the two preliminary studies will inform the overarching A9 Dualling Programme by identifying which sections are least constrained and could potentially be brought to construction earliest and which sections are more constrained and may require a longer timescale for preparation.

It is anticipated that the more constrained sections would be likely to be commissioned for early design, although construction may be expected later in the delivery programme to account for additional assessment and statutory approvals processes.

2 Approach to the SEA

2.1 Overarching Principles

The A9 passes through areas which are outstanding in wildlife and landscape terms, in particular, the Cairngorms National Park and a number of nationally and internationally designated sites. A9 dualling-related effects in such areas must be carefully considered through early design phases and sensitively managed through construction phases.

The purpose of this SEA is therefore to help link previous STPR work to project-level environmental assessment and design, with emphasis on:

- recognising the STPR recommendations and the IIP decision to dual;
- recognising that the A9 dualling SEA is high level assessment of issues and opportunities to inform the selection of a preferred dualling corridor, similar in scope to an Environmental Assessment under Stage 1 of the Design Manual for Roads and Bridges (DMRB) requirements;
- adopting a pragmatic approach to assessment which considers whether a particular issue would influence/ change 'where the route goes';
- presentation of route-wide environmental constraints, to support corridor selection;
- predicting significant environmental effects including those of alternative options;
- proposing mitigation and enhancement measures to be applied at the programme level (e.g. recommendations for specific detailed studies, strategic principles, etc.);
- consulting with statutory environmental bodies and the public as part of the process; and
- developing strategic environmental principles and an outline environmental monitoring framework for the A9 Dualling Programme.

It is important to emphasise that the decision to dual the single carriageway sections of the A9 has been taken following the STPR and its SEA, and this SEA does not revisit the decision to dual. Instead it has focused on identifying route-wide environmental constraints and issues, at a range of scales, to inform the sifting and selection of a number of corridor options which support the delivery of A9 dualling.

In terms of the consideration of duration, permanence and frequency of effects, discussion in this SEA assumes that the construction period for any one dualling scheme could last in the region of 12-24 months, depending on the scheme length. The detailed assessment matrices, provided as Appendix C, consider the construction stage as short term, with potentially high impacts locally; however, they are generally considered temporary in nature, e.g. disruption/ disturbance/ pollution risks.

As the typical mitigation recommendations for construction stage effects would refer to best practice Construction Environmental Management Planning and local exclusion/ buffer zones informed by local survey and EIA; the discussion through the main body of this Report generally considers the potential long term effects of permanent change, associated with land take within corridor options, and identifies where dualling needs to consider particular issues in more detail to avoid (where possible) and minimise significant effects.

2.2 SEA Screening

Table 2.1 presents a Screening Matrix, similar to the Scottish Government's SEA Toolkit Guidance example (the heading of the third column has been adapted), to provide some introductory context to the high level issues being considered by the SEA.

Table 2.1 A9 Dualling Programme SEA Screening Assessment

Criteria for determining the likely significance of effects on the environment	Likely to be significant? YES/ NO	Summary of issues for the A9 Dualling Programme SEA
1 (a) the degree to which the A9 Dualling Programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources	YES	High level programme to 2025 will set the framework for design, planning, consultation and statutory processes as well as construction periods. Actual phasing/ scheduling of construction projects is flexible depending on environmental, engineering, consultation and planning constraints.
1 (b) the degree to which the A9 Dualling Programme influences other PPS including those in a hierarchy	NO	The programme itself will not have a significant influence on other plans; however, the final location of A9 dualling upgrades could influence future development planning considerations.
1 (c) the relevance of the A9 Dualling Programme for the integration of environmental considerations in particular with a view to promoting sustainable development	YES	The aim of this SEA is to determine the key environmental constraints and opportunities such that the A9 Dualling Programme can effectively integrate environmental considerations, manage risks, consultations and approval processes through project level design and environmental assessments.
1 (d) environmental problems relevant to the A9 Dualling Programme	YES	The SEA will identify, collate and consider the environmental constraints along the entire A9 dualling route from Perth to Inverness.
1 (e) the relevance of the A9 Dualling Programme for the implementation of Community legislation on the environment	YES	The principal Community legislation to be taken into consideration for A9 dualling includes the Birds Directive (79/409/EEC), Habitats Directive (92/43/EEC), EIA Directive (85/337/EEC), Water Framework Directive (2000/60/EC), Waste Framework Directive (2008/98/EC) and the Air Quality Directive (2008/50/EC).
2 (a) the probability, duration, frequency and reversibility of the effects	YES	Some soil losses to hard standing (road) will be permanent, new structures will be permanent features, as will the ultimate visual effect. Construction related effects will generally be temporary, e.g. use of land for site compounds, noise, vibration, etc. Effects on biodiversity may be permanent if related to habitat losses to hard standing, or temporary and reversible where related to construction.
2 (b) the cumulative nature of the effects	YES	Will be determined through the SEA assessment, but are likely to relate to effects associated with permanent change along the A9 route.
2 (c) transboundary nature of the effects (i.e. environmental effects on other EU Member States)	NO	None likely.
2 (d) the risks to human health or the environment (for example, due to accidents)	YES	A9 dualling is expected to improve road safety and reduce accident risks (human) providing significant benefits over the medium to long term. Short term effects during construction stages could include accidents related to site-workers, general public, road users and environmental incidents; however, these are expected to be minimised through regulation and construction best practice.
2 (e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)	YES	A9 dualling will present a range of effects across the preferred corridor region from Perth to Inverness. Effects at the regional population scale are anticipated to be positive, with potential for negatives (e.g. loss of existing direct accesses) at local levels.
2 (f) the value and vulnerability of the area likely to be affected due to- (i) special natural characteristics or cultural heritage; (ii) exceeded environmental quality standards or limit values; or (iii) intensive land-use.	YES	The A9 runs through or alongside numerous high value landscape and natural/ cultural heritage features and dualling options will require sensitive consideration to determine how to avoid and minimise effects and to realise opportunities for enhancement. There are unlikely to be significant risks to environmental quality standards or limit values from dualling activities; and any risks will be minimised through regulation and construction best practice. The principle land-use likely to be affected would be forested land where it borders the A9, and some agricultural land may also be affected.
2 (g) the effects on areas or landscapes which have a recognised national, Community or international protection status	YES	The A9 already runs through a range of designated landscapes, and dualling will present varying effects; however, appropriate consultation to inform sensitive design and maximising online widening along the existing route will help minimise any impact.

2.3 SEA Scoping

2.3.1 Scoping – Policy, Plans & Strategies (PPS) Review

2.3.1.1 From National Transport Strategy to A9 Dualling Programme

Figure 2-1 outlines the strategic transport infrastructure planning hierarchy from the National Transport Strategy (NTS, 2006) through the STPR (2008), the IIP commitment to dualling (2011), onto the A9 Dualling Programme and this SEA (2012-13) and later, more detailed DMRB Stage 2 and Stage 3 route alignment studies, design and environmental assessment (EA) stages.

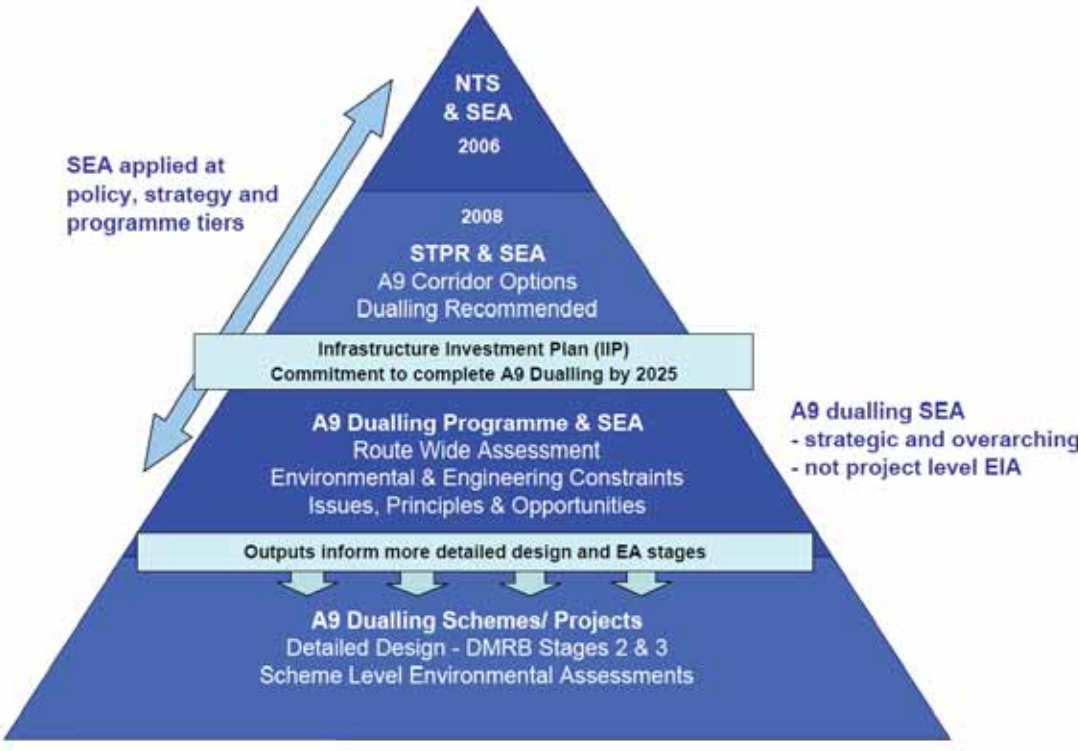

Figure 2-1 Strategic policy and transport infrastructure planning hierarchy for A9 Dualling

The following sub-sections of this part outline the cascade of strategic transport objectives from national level through to the A9 Dualling Programme. A summary of the STPR SEA 'do minimum' scenario assessment findings for the A9 Perth-Inverness Corridor is also included, to provide some context on the starting point for this SEA.

2.3.2 National Transport Strategy (NTS, 2006) Objectives

The overarching aim of the NTS is to **deliver a world class transport system** in conjunction with five high level objectives:

1. Promote economic growth;
2. Improve integration;
3. Promote social inclusion;
4. Improve safety of journeys;
5. Protect our environment and improve health.

The NTS also identified **three strategic outcomes**:

- Improved journey times and connections
  to tackle congestion, integration and connections in transport which impact on objectives for economic growth; social inclusion; integration and safety;
- Reduced emissions
  to tackle the issues of climate change, air quality and health improvement which impact on objectives for protecting the environment and improving health;
- Improved quality, accessibility and affordability
  to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car.

2.3.3 Strategic Transport Projects Review (STPR, 2008)

At the **National Level,** the STPR objectives included:

- Promote 'competitive' inter-urban journey times;
- Reduce inter-urban journey time on public transport;
- Promote journey time reduction on the trunk road network for prioritised vehicles and users (e.g. high occupancy vehicles, freight, bus) where appraisal balances the economic case with environmental objectives;
- Elsewhere on the trunk road network provide improvements to journey time reliability;
- Promote journey time reductions between the central belt, Aberdeen and Inverness; to allow business to achieve an effective working day travelling between these centres;
- Support the development and implementation of proposed developments of national strategic importance.

At the **Corridor Level,** the STPR Perth to Inverness objectives included:

- Reduce journey time and increase opportunities to travel between Inverness and Perth;
- Improve the operational effectiveness of the A9 as it approaches Perth and Inverness;
- Address issues of driver frustration relating to inconsistent road standard with attention to reducing accident severity;
- Promote journey time reductions, particularly by public transport, between the central belt and Inverness; to allow business to achieve an effective working day travelling between these centres.

The STPR was subject to Strategic Environmental Assessment to consider the potential for environmental effects associated with transport interventions within a broad 15km corridor around the A9. A summary of the STPR SEA findings is provided below.

2.3.3.1 STPR SEA Assessment Findings

The following provides an extract summary of the assessment findings of the STPR SEA, with respect to A9 dualling interventions:

STPR SEA Assessment Findings

The main beneficial effects of this intervention were associated with the environmental issues of:

- population
  through improved linkages and accessibility between Perth, Inverness, and the Central Belt;
- human health
  through reducing the frequency and severity of accidents, and a predicted reduction in congestion could also enhance local air quality leading to further benefits to health;
- material assets through utilisation of existing road infrastructure;

which all represented minor benefits.

There were a series of potential adverse effects on some environmental features, but a high degree of uncertainty surrounded these, as the exact nature of the works employed in providing this intervention was not certain.

Depending on the actual form and location of works there were likely to be adverse effects on regional resources:

- biodiversity
  of a minor, moderate or major nature depending on effectiveness of mitigation measures to protect nationally designated sites;
- cultural heritage
  of a minor, moderate or major nature;
- soils and geology
  of a major nature due to the proposed route passing through Glen Garry SSSI and quality of soils surrounding current road;
- landscape and visual
  of a major nature due to the route passing through the Cairngorms National Park and National Scenic Area;
- water
  nature of adverse effects currently uncertain due to lack of detail; and
- noise
  of a minor to moderate adverse nature due to potentially increased traffic flows.

It was also proposed that due to restrictions placed on the form and siting of works by the Habitats Directive, that all potential adverse effects on European designated sites would be avoided.

Based on the information currently available however, the Information to Inform Appropriate Assessment could not conclude that, at a strategic level, it would be possible to carry out the proposed intervention without adversely affecting the integrity of designated sites including:

- River Spey - Insh Marshes SPA & Ramsar;
- Insh Marshes SAC; and
- Drumochter Hills SPA & SAC.

Accordingly, the Appropriate Assessment proposed two alternative engineering solutions to address the potential effects on Natura 2000 sites. It should be noted that the two alternative engineering solutions would not involve permanent or temporary land-take within the sites.

The intervention was not expected to have a significant effect on CO2e emissions.

At this stage of detail it was considered that the potentially significant adverse effects of the intervention on a number of environmental media outweighed the contribution to human health, population, material assets and air quality.

Therefore the intervention was envisaged to have a moderate to major adverse effect.

It was envisaged that these effects would be minimised through sensitive siting and design in line with legislative requirements (The Transport and Works (Scotland) Act 2007; (Consents under Enactments) Regulations 2007; Water Environment (Controlled Activities) (Scotland) Regulations 2005) and best practice outlined in the DMRB.

This A9 dualling programme SEA recognises that the STPR SEA findings reflect a relatively high level of uncertainty, as it considered the potential for dualling activity anywhere within a broad 15km corridor zone. One of the key aims of this SEA is to reduce the level of uncertainty by considering the potential for effects within narrower corridor options.

2.3.4 A9 Dualling Programme Objectives

Following the principle of cascading objectives through the NTS and STPR strategic hierarchy, the A9 Dualling Programme objectives are:

1. To improve the operational performance of the A9 by:
   - Reducing journey times
   - Improving journey time reliability
2. To improve safety for motorised and non-motorised users by:
   - Reducing accident severity
   - Reducing driver stress
3. Facilitate active travel in the corridor
4. To improve integration with Public Transport Facilities

A9 Dualling objectives at the **Project Level** will be set to align with the strategic objectives above, but also to take account of local level constraints and needs, as required.

2.3.5 Review of Other PPS – Summary of Environmental Principles

The STPR SEA considered over 60 plans, programmes and strategies (PPS) at international, national, regional and local levels and Appendix A to this Report provides a review of additional PPS.

The PPS review includes **National/ Regulatory Level** requirements, introduced or updated since the STPR, including the Climate Change (Scotland) Act, the Flood Risk Management (Scotland) Act, as well as natural and cultural heritage related legislation and regulations.

At the **Regional Level**, the PPS review includes Local Authority and Cairngorms National Park Authority plans and supplementary guidance.

At the **Local Level**, the review includes information available on other recent or planned projects in the A9 corridor, including the Beauly-Denny Grid Infrastructure project.

The PPS review informed baseline constraint mapping, by identifying the locations of other projects, and Local Authority development planning land allocations where such information was available. This has informed SEA consideration of potential cumulative effects and the development of mitigation recommendations, as well as in-combination assessments for a supporting Habitats Regulations Appraisal (HRA) Screening exercise.

Table 2.2 summarises a preliminary range of environmental principles, distilled from the PPS review. A9 dualling projects will be designed and delivered to meet current regulations, standards and guidance; however, as the outputs from the SEA and Preliminary Engineering work are intended to support route-wide consistency throughout the A9 Dualling Programme, the preliminary range of principles noted below will be reviewed and tailored to be more A9 specific, with recommendations on strategic environmental design principles presented through the SEA Post Adoption Statement, following consultation with the SEA Consultation Authorities (SEPA, SNH and Historic Scotland) and the Cairngorms National Park Authority.

Table 2.2 Summary of Environmental Principles from PPS Review

SEA Topic	Preliminary Environmental Principles
Material Assets	– Adapt and improve resilience to the effects of climate change – Promote local/ sustainable sourcing of materials – Promote sustainable design and innovation to reduce material consumption – Avoid and minimise waste generation – Maximise re-use of material resources and use of recycled materials – Avoid and minimise use of scarce/ rare earth resources – Minimise energy consumption and encourage use of renewable energy – Integrate whole life carbon optimisation considerations through sustainable design – Act in the way best calculated to deliver Scotland's emission reduction targets
Population & Human Health	– Improve road safety and opportunities for active travel – Maintain and improve access and connectivity for local communities – Enhance driver/ tourist/ visitor experience – provide opportunities to stop – Adapt to climate change and improve resilience to extreme weather events – Control and reduce harmful emissions to air
Landscape & Historic Environment	– Conserve and enhance the special and distinct landscape character and qualities of the Cairngorms National Park – Avoid and minimise effects on landscapes through sensitive design and consultation – Enhance the view from the road/ driver/ touring experience – Conserve, preserve and record architectural and archaeological heritage – Avoid and minimise effects on historic environment features through sensitive design and consultation
Biodiversity, Flora & Fauna	– Conserve and enhance biodiversity at all levels – Avoid and minimise effects on nationally and internationally rare and threatened species and habitats through sensitive design and consultation, recognising ecological connectivity – Facilitate species and habitat adaption to climate change – Avoid and minimise habitat fragmentation and seek opportunities to improve habitat connectivity – Ensure careful consideration of non-native invasive species issues – Seek opportunities to increase carbon sequestration
Soil	– Avoid and minimise soil losses/ sealing – Maintain or improve carbon storage capacity of soils – Maintain hydrological integrity of peat/ wetlands – Maintain productive capacity and prevent erosion of soils – Ensure careful consideration of non-native invasive species issues
Water	– Maintain and improve water quality – Avoid and minimise effects on natural processes, particularly natural flood management and catchment processes through sensitive design and consultation – Adapt and improve resilience to the effects of climate change, particularly flood risks associated with extreme weather – Minimise water consumption/ abstractions – Design SUDS to facilitate ecological improvement/ enhancement where possible
Inter-relationships (cross-cutting all topics/ issues)	– Maintain and improve the health of people, ecosystems and natural processes – Minimise effects on landscape and historic environment features – Adapt and improve resilience to climate change and extreme weather events – Actively seek to integrate opportunities for enhancement

It should be noted that the SEA topics, Air and Climatic Factors, have been scoped out as specific topics for SEA consideration; however, where relevant, they will be considered under related topic headings, such as Material Assets, Water and Population and Human Health (see next section).

2.3.6 Scoping Topics In/ Out

SEA Scoping considered a long list of potential issues related to A9 dualling. The range of issues were identified via reviews of previous A9 workshop reports (March 2012 consultations) and consultee feedback from the SEA Scoping workshop (November 2012).

Each issue was assessed with two overarching questions on significance in mind:

Is this an issue that will…?

1. affect/ change where the route could go;
2. require further consideration to provide guidance for later design and EA stages.

Following consideration of the range of issues potentially related to A9 dualling, Table 2.3 provides an overview of the topics that are scoped in/ out of the SEA.

The scoped-out topics were discussed and agreed with the SEA Consultation Authorities during the Scoping consultation period.

Table 2.3 Scoping SEA Topics

SEA Topic	Scoped in/ out	Comment
Climatic Factors	**Out**	Agreed with SEA Consultation Authorities, based on inclusion within material assets and water topics.
Air	**Out**	Agreed with SEA Consultation Authorities, based on inclusion within population and human health topics.
Material Assets	**In**	Material assets in this SEA are defined as: – the A9 itself; – the Highland Mainline Railway; – power/ grid infrastructure; – planned development within the corridor. Will also consider opportunities to include strategic principles on resource and carbon efficiency, in the absence of specific consideration under a climatic factors topic (scoped out).
Population	**In**	SEA has considered accident data and access issues. Does not specifically assess air quality or noise at this level, but recognises these as important issues requiring more detailed assessments at the local level.
Human Health	**In**	
Landscape	**In**	SEA has considered designated landscapes, the special qualities of the Cairngorms National Park, wildness, dark skies, protected sites and historic setting, as well as opportunities for enhancement in strategic principles.
Historic Environment	**In**	
Biodiversity, Flora, Fauna	**In**	SEA has considered Natura, SSSI, National Nature Reserves and National Biodiversity Network (NBN) data on red squirrel, otter and wildcat, as well as SNH data on deer and vehicle collisions. Has included consideration of strategic principles on route permeability for species.
Soil	**In**	SEA has considered geological designations, peat and wetlands, as well as strategic principles on rock cuttings, particularly in respect to the crossover with landscape and visual issues.
Water	**In**	Climate adaptation and resilience will be embedded through design standards to improve road surface drainage, SUDS and tolerances in new crossings/ structures. Strategic Flood Risk Assessment includes watercourse crossings, road drainage and SUDS, as well as flooding issues to inform strategic principles.

2.3.7 Scoping Stage Assessment of 3 Strategic Alternatives

The SEA Scoping Report included a preliminary assessment of three high-level strategic alternatives for dualling options:

1. Online widening
   Considered dualling along the existing A9 single carriageway sections, to tie in with existing dualled sections;
2. Online widening with some near offline
   Considered dualling along the existing A9 route, with near offline dualling where constraints dictate;
3. Alternative route (s)
   Considered the issues around developing an alternative route to the existing A9.

As A9 dualling has been committed to through the Infrastructure Investment Plan, SEA Scoping stated that there would be no consideration of a 'do nothing' option, although a 'Business as Usual' scenario was used to provide context for the preliminary assessment.

Figure 2-2 provides an overview of the Scoping activities that informed the preliminary assessment of strategic alternatives and the outcome of the assessment process.

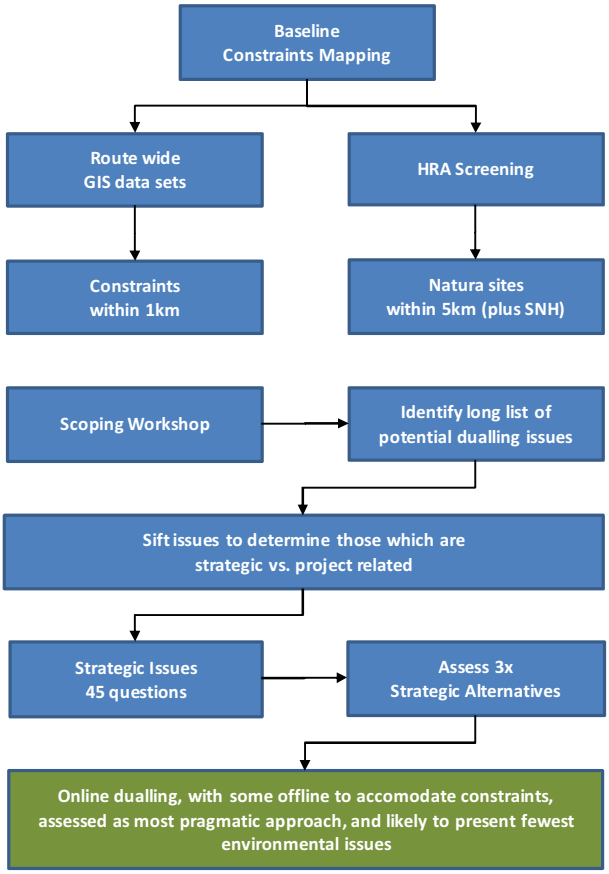

Figure 2-2 Approach to Scoping stage preliminary strategic alternatives assessment

The preliminary assessment considered the three strategic alternatives, against 45 SEA topic based questions, to determine which of the three would be likely to present fewer environmental issues and the lowest levels of resource consumption.

The assessment determined that strategic alternative 1 (online widening) would be likely to present fewer environmental issues, as well as the lowest levels of resource consumption, when compared with the alternative route(s) option (3).

The assessment also confirmed that maintaining flexibility (alternative 2) to consider near offline options around significant constraints would be likely to provide the optimum pragmatic approach.

Feedback from the SEA Consultation Authorities on the preliminary assessment queried some of the 45 questions employed. The main issue highlighted was that the assessment questions used terminology such as 'limit' or 'minimise' when comparing potential effects, whereas the consultees would have preferred the use of 'avoid' as the primary assessment principle.

SEA recognises the environmental mitigation hierarchy and that avoidance of an adverse effect is preferable to minimisation of that effect. Follow up discussions with the SEA Consultation Authorities clarified that, as this was a preliminary assessment of the general issues likely to be associated with high level strategic alternatives, it was appropriate to consider which alternative approach would, theoretically, present more or fewer issues.

Following these discussions, the SEA Consultation Authorities agreed the SEA Scoping approach and the general findings of the assessment, subject to a more detailed assessment of issues within each corridor option to be taken forward.

2.3.8 Scoping Report Feedback

Appendix B to this report provides a record of the SEA Consultation Authority feedback on the Scoping Report, with responses from the SEA team. The table identifies where feedback has been incorporated in this Environmental Report.

2.3.9 Habitats Regulations Appraisal (HRA) Screening

In order to ensure effective assessment of potential effects on Natura sites (sites designated under European Directives as Special Protection Areas (SPA), Special Areas of Conservation (SAC), or Ramsar sites), an HRA Screening assessment is running in parallel with the SEA.

An early draft HRA Screening Report was submitted with the SEA Scoping Report for comment from SNH. Following consultation with SNH, the HRA Screening was revised to provide additional clarity on the rationale for determining which particular sites would not be subject to likely significant effects (LSE) and, as such, could be removed from further consideration. SNH also noted that where the potential for LSE is identified for any site, then a programme level Appropriate Assessment needs to be undertaken.

The revised HRA Screening Report has been submitted for further consultation with SNH. Where an Appropriate Assessment is deemed necessary for any site, this will be carried out during the ER consultation period and any resultant (additional/ different) recommendations will be incorporated via the SEA Post Adoption Statement.

2.4 SEA Forward Programme

The table below outlines the targeted programme for completion of the A9 Dualling SEA process.

Table 2.4 A9 Dualling SEA Programme

SEA Activity	Target Completion
Environmental Report (ER) publication	June 2013
ER consultation	8 weeks (through June and July 2013)
A9 dualling public consultation events	June 2013
Consultation feedback review	August 2013
Completion of related preliminary strategic studies • Habitats Regulations Appraisal and Appropriate Assessment • Strategic Flood Risk Assessment • Landscape Review	August/ September 2013
SEA Post Adoption Statement (including finalised monitoring framework)	October 2013

3 Environmental Baseline Constraint Data

3.1 GIS Approach

In order to effectively assess the key issues and constraints along a study area of approximately 180km in length, this SEA has adopted a GIS (Geographical Information Systems) mapping approach. At the Scoping stage, this approach identified the locations of features/ constraints within 1km of the current A9.

A number of alternative corridor options were developed following the SEA Scoping Report, and a sifting exercise (discussed further in Section 4) was undertaken to identify a shortlist of potentially viable corridor options. The resultant shortlist includes an online corridor option along the route, divided into six sections, and four near-offline options in two of those sections.

Each of the shortlisted corridor options lie within the original 1km area for which GIS data was mapped. The detailed assessment has focused on identifying the issues/ features within a nominal 200m boundary around each corridor option.

It should be recognised that the 200m boundary which defines each corridor is a soft boundary. Where the SEA recognises potential pinch points within the 200m corridor, where significant constraints cannot be avoided, it will be recommended that route alignment studies in the relevant corridor section broaden the corridor as far as required to develop an alternative alignment solution.

The 200m boundary has been set for the purposes of defining the potential implications of positioning the road within the defined corridor. For each topic area under consideration, the relevant spatial area has been identified for assessment. For example, landscape issues are considered over a wider 10km zone.

3.2 Six A9 Sections/ Study Areas

Given the length of the A9 between Perth and Inverness, SEA Scoping initially divided the route into seven study areas to aid the presentation of baseline constraint data. Following Scoping, the A9 PES work has developed a range of potential corridor options which divide the route into six sections.

To ensure consistency between engineering assessment reports and the SEA, the decision was taken to present the findings of the assessment in relation to the six A9 sections rather than seven SEA study areas identified during the scoping process.

As this is principally a data presentation issue, the change from seven areas to six sections does not alter the result of the SEA Scoping stage preliminary assessment, and does not affect the analyses in this Report.

SEA recognises that earlier A9 consultation workshop feedback raised a concern that the division of the A9 into sections could result in construction schemes with start/ end points in the middle of a designated site. A key recommendation was that future studies should incorporate such sites within a single design/ construction scheme section. This will be carried through to the SEA recommendations.

Table 3.1 below provides an overview of the six A9 corridor sections (labelled A-F), identifying the relevant stretches of the A9 route within each section.

Table 3.1 Six A9 Corridor Sections

Section Ref.	Corridor Section	km
A	**Perth (Inveralmond) to south of Tay Crossing (north of Dunkeld)**	**~ 21.5**
Dual carriageway from Inveralmond to Luncarty		
Single carriageway from Luncarty to Pass of Birnam dualled section		
Pass of Birnam dual carriageway section		
Single carriageway through Birnam and Dunkeld to south of Tay Crossing (north of Dunkeld)		
Includes two schemes at later DMRB design phase (commenced before IIP commitments) from Luncarty-Birnam and Birnam-Tay Crossing		
B	**Tay Crossing to Bruar**	**~ 34.9**
Single carriageway from south of Tay Crossing to south of Ballinluig		
Dual carriageway through Ballinluig to south of Pitlochry		
Single carriageway from Pitlochry to just north of Faskally House		
Dual carriageway from Faskally to the Pass of Killiecrankie/ Killiecrankie Battlefield		
Single carriageway from Killiecrankie Battlefield to just north of Bruar/ Pitagowan		
C	**Bruar to Dalwhinnie**	**~ 29.1**
Single carriageway from Bruar/ Pitagowan to Glen Garry dualled section		
Dual carriageway through Glen Garry to just south of Dalnaspidal Lodge		
Single carriageway from Dalnaspidal through the Pass of Drumochter to just south of the Wade Bridge at Drumochter (south of Dalwhinnie)		
D	**Dalwhinnie to Newtonmore**	**~ 14.1**
Single carriageway from Drumochter/ Wade Bridge to Crubenmore		
Dual carriageway from Crubenmore to south of Newtonmore near Bridge of Truim		
E	**Newtonmore to Kinveachy (south of Carrbridge)**	**~ 34.4**
Single carriageway from south of Newtonmore to Kinveachy (south of Carrbridge, just north of Loch Vaa)		
Passes Newtonmore, Kingussie, Aviemore		
Includes one scheme at later DMRB design phase (commenced before IIP commitments) from Kincraig-Dalraddy (north of Kingussie, south of Aviemore)		
F	**Kinveachy to Inverness**	**~ 39.2**
Single carriageway from Kinveachy to just north of Slochd summit		
Dual carriageway from Slochd to just north of Tomatin		
Single carriageway from Tomatin to north of Moy		
Dual carriageway from Moy to Longman in Inverness		

Figure 3-1 provides an illustration of the six sections described. Red lines represent the single carriageway sections and the grey lines represent currently dualled sections. The blue lines indicate the section breaks.

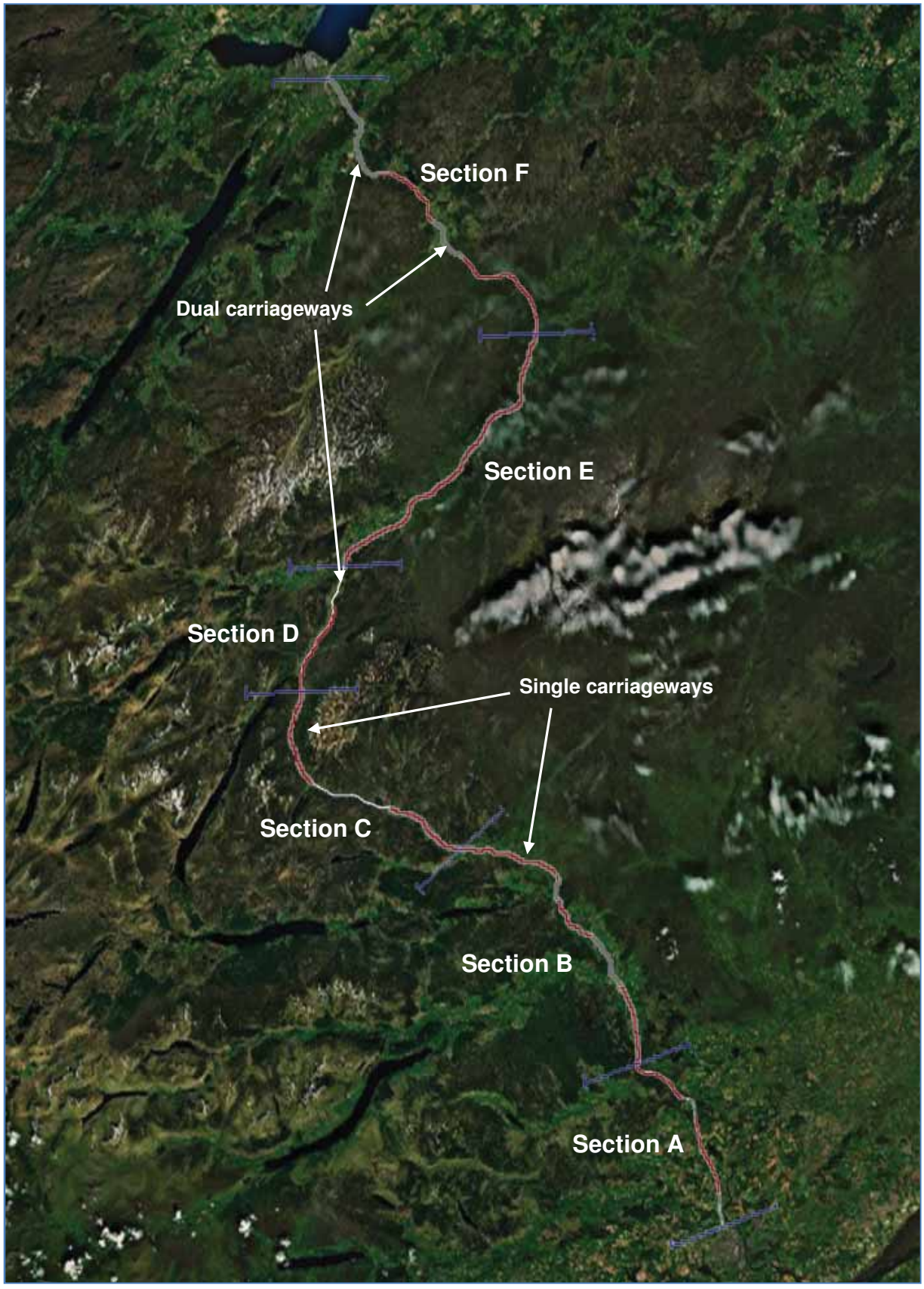

Figure 3-1 Overview of six A9 corridor sections

3.2.1 Baseline Data

Table 3.2 details the datasets used to inform SEA constraint mapping and GIS analyses.

Table 3.2 Data used for SEA GIS Mapping and Analyses

Type	Source
Base Mapping	
1:250,000, 1:50,000, 1:10,000 scale OS Maps	Ordnance Survey via Transport Scotland
A9 Route Data	
A9 dualled and single carriageways Accident Data	Transport Scotland
Biodiversity Data	
Ramsar/ Special Protection Areas (SPA)/ Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI) National Nature Reserves Inventory of Ancient Woodland/ Semi Natural Ancient Woodland	Scottish Natural Heritage
Species data at 1km & 100m resolution Red squirrel, otter & wildcat	National Biodiversity Network
Road kill record	Scotland Transerv (A9 Operating Company)
Landscape Data	
National Scenic Areas Landscape Character Areas (LCA) Search Areas for Wildness (Wildness Composite mapping) Cairngorms National Park Boundary (new)	Scottish Natural Heritage
Cairngorms LCA zones	Cairngorms National Park Authority
Zone of Theoretical Visibility	Halcrow GIS derived
Historic Environment Data	
Listed Buildings/ Conservation Areas Battlefield Sites/ Scheduled Monuments	Historic Scotland
Gardens & Designed Landscapes	Scottish Natural Heritage
Unscheduled Archaeology (Data added to A9 GIS databank, not assessed in SEA)	The Highland Council Perth & Kinross Heritage Trust
Note: Unscheduled archaeology was identified by Historic Scotland a data gap in SEA Scoping to be highlighted for consideration through the more detailed route alignment stages	
Soils & Water Data	
Geological Conservation Review Sites & SSSI	Scottish Natural Heritage
Peat and Peaty Soils (derived)	James Hutton Institute Soils Mapping
Wetland Inventory 200 Year Indicative Flood Mapping Watercourses	SEPA and CEH
Human Environment	
Cairngorms National Park – Development Plan Allocations Cairngorms National Park – Core Paths	Cairngorms National Park Authority
Perth & Kinross Council – Development Plan Allocations Perth & Kinross Council – Core Paths Perth & Kinross Council – Cycle Routes	Perth & Kinross Council
Highland Council – Core Paths	Highland Council
Sustrans National Cycle Network Routes	Transport Scotland
Material Asset Data	
Wind Farm Sites	Scottish Natural Heritage
Beauly - Denny Line	Jacobs derived
Highland Mainline & Existing Powerlines	Halcrow derived

Appendix D to this report provides a full range of GIS constraint maps for each A9 corridor section, using the datasets noted above.

4 Indicative Corridor Options

4.1 Option Sifting Exercise

During the SEA Scoping Report consultation period, the A9 Preliminary Engineering Services (PES) work developed a wide range of indicative corridor options for consideration. Each option was developed as a high level conceptual proposal, based on a general corridor area model, and does not set a specific alignment within a corridor.

The aim was to present a range of broad offline alternative corridors (7 were proposed) for comparison with an online corridor option along the current route (effectively 8 broad corridor options in total). The PES work also developed 20 local alternatives, near offline options, to address specific issues in the online corridor (e.g. to straighten significant bends in the road) or to avoid recognised constraints (e.g. Killiecrankie Battlefield).

The figure below outlines the process employed to sift the range of indicative corridor options identified. The following parts of this section provide a summary of the options and the SEA input to the sifting exercise.

A full description of the alternative broad corridors, the online and near offline options, a record of the combined PES/ SEA constraints assessment and reasons for elimination is provided in the Options Sifting Report, attached as Appendix E to this Report.

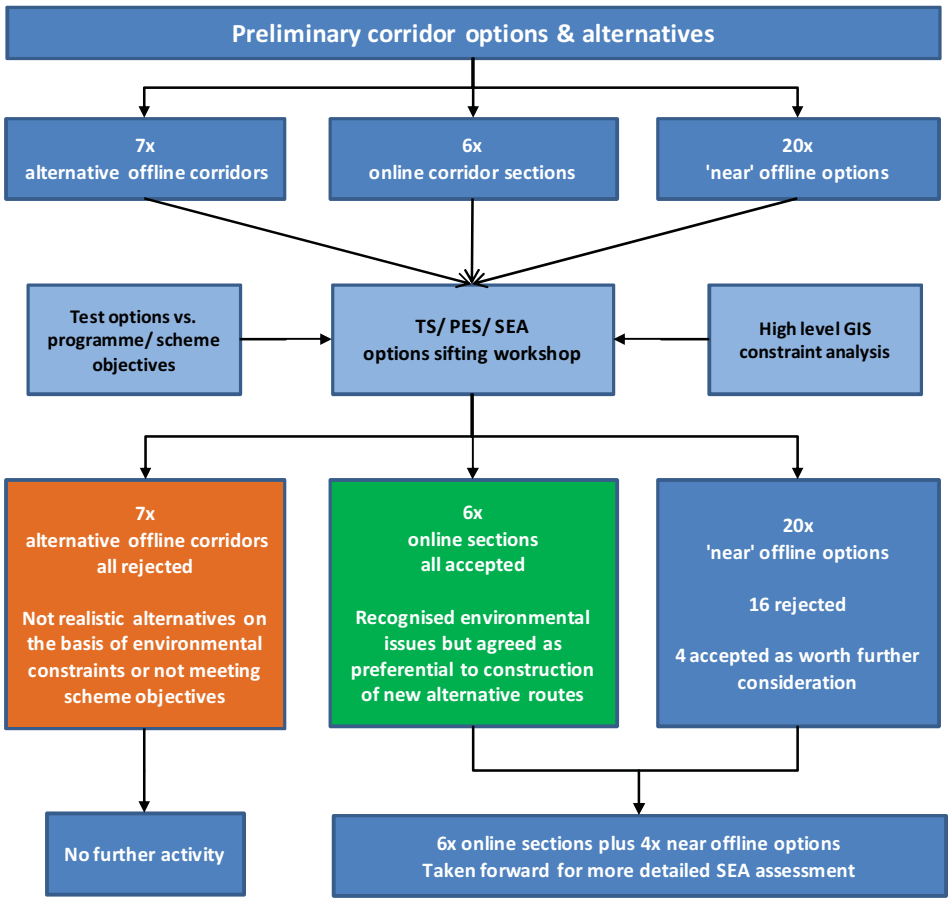

Figure 4-1 Indicative corridor options sifting process

4.2 Indicative Broad Offline Corridors

Seven indicative broad offline corridor options (labelled A to G in Figure 4-2 below) were developed as large-scale general concepts, which either vary significantly from the existing route of the A9 trunk road or provide more direct links between points on the existing route. Table 4.1 provides a summary description of each option.

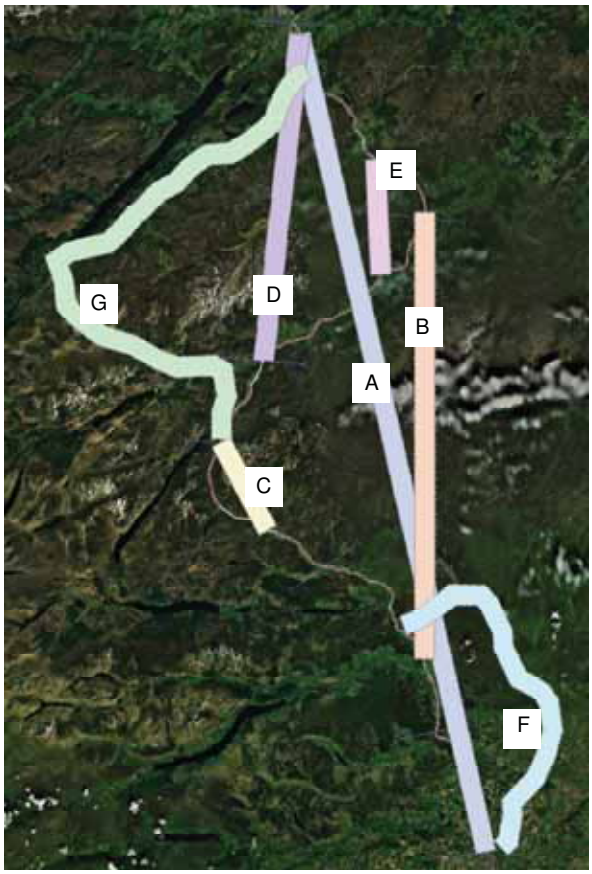

Figure 4-2 Overview of seven indicative broad corridors

Table 4.1 Indicative Offline Corridors

Option	Description
A	**Perth to Inverness Direct**
A direct route between the two cities.	
B	**Ballinluig to Carrbridge Direct**
A direct route between Ballinluig and Carrbridge, removing the need to travel the length of the existing A9 via the Drumochter Pass.	
C	**Tunnel at Drumochter Pass**
Tunnel option to avoid one of the highest points of the A9, regularly affected by adverse weather.	
D	**Newtonmore to Inverness Direct**
Direct route between Newtonmore and Inverness, removing the need to travel the length of the existing A9 via Aviemore and the Slochd.	
E	**Tunnel from Kincraig to Tomatin**
Tunnel option to avoid one of the highest points on the A9, regularly affected by adverse weather.	
F	**Inveralmond to Pitlochry**
Using existing road infrastructure corridors including the A93 and the A924 via Blairgowrie.	
G	**Dalwhinnie to Inverness**
Using existing road infrastructure corridors including the A889, A86 and the A82 via Fort Augustus.	

The Options Sifting Report explains that the seven broad corridor options were assessed against the A9 Dualling Programme Objectives, to determine whether any might not meet the Programme Objectives (described as Sifting Part 1). Options A, B, D, F, and G were assessed as unable to deliver the Programme Objectives and were eliminated from further consideration.

Tunnel Options C and E were assessed as potentially able to deliver the Programme Objectives and were taken forward for further consideration. SEA input identified that:

Option C – Drumochter Tunnel

- Entails a significant length (approx 15km) of twin bore tunnel construction;
- The northern entrance is located within the Drumochter Hills SAC/ SPA/ SSSI site;
- Tunnel ventilation shafts, construction and maintenance access tracks, would be required within the Drumochter Hills site, impacting designated species and habitat;
- Noise and vibration from tunnelling activity would be more likely to disturb species within the Drumochter Hills site;

- Tunnelling followed by road laying activity would increase the period of disturbance;
- The southern end of the tunnel would be located around the Glen Garry Geological SSSI and A9 and River Garry Geological Conservation Review (GCR) sites;
- Tunnelling would create a significant volume of excavated material that would potentially have to be treated as waste;
- A significant length of an existing dualled section of the A9, bypassed by the tunnel, potentially becomes redundant; and
- Tunnel management, maintenance requirements and potential restrictions on use for vehicles carrying flammable materials (e.g. whisky) are likely to offset the benefits of improved winter resilience.

SEA determined that Option C would be less favourable than an online corridor option in this area. Additional aspects related to cost and engineering constraints were considered as part of the PES work, and the Option Sifting Report recommended that Option C should not be taken forward for further consideration.

Option E – Kincraig to Tomatin Tunnel

- Entails a significant length (approx 17km) of twin bore tunnel construction;
- The southern end of the tunnel would be located close to the Cairngorms National Scenic Area, and the Alvie SSSI site;
- The northern end would be located close to the Slochd SAC and the Slochd Geological Conservation Review (GCR) area, and would require a connecting tie-in with a crossing of the Highland Mainline;
- Requires tunnelling under the River Spey SAC and tunnel ventilation shafts, construction and maintenance access tracks, would be required within the Kinveachy Forest SAC/ SPA/ SSSI site, impacting designated species and habitat;
- Noise and vibration from tunnelling activity would be more likely to disturb species within the Kinveachy Forest site;
- Tunnelling followed by road laying activity would increase the period of disturbance;
- Tunnelling would create a significant volume of excavated material that would potentially have to be treated as waste;
- Bypasses Aviemore and Carrbridge providing no local improvement to the road, and potentially reducing traffic volume and therefore passing trade for local business;
- Tunnel management, maintenance requirements and potential restrictions on use for vehicles carrying flammable materials (e.g. whisky) are likely to offset the benefits of improved winter resilience.

SEA determined that Option E would be less favourable than an online corridor option in this area. Additional aspects related to cost and engineering constraints were considered as part of the PES work, and the Option Sifting Report recommended that Option E should not be taken forward for further consideration. Overall, this meant that all of the broad offline corridors were sifted out from further consideration.

Figure 4-3 below provides a screenshot demonstrating how GIS analysis informed the SEA input to the assessment of broad corridor options.

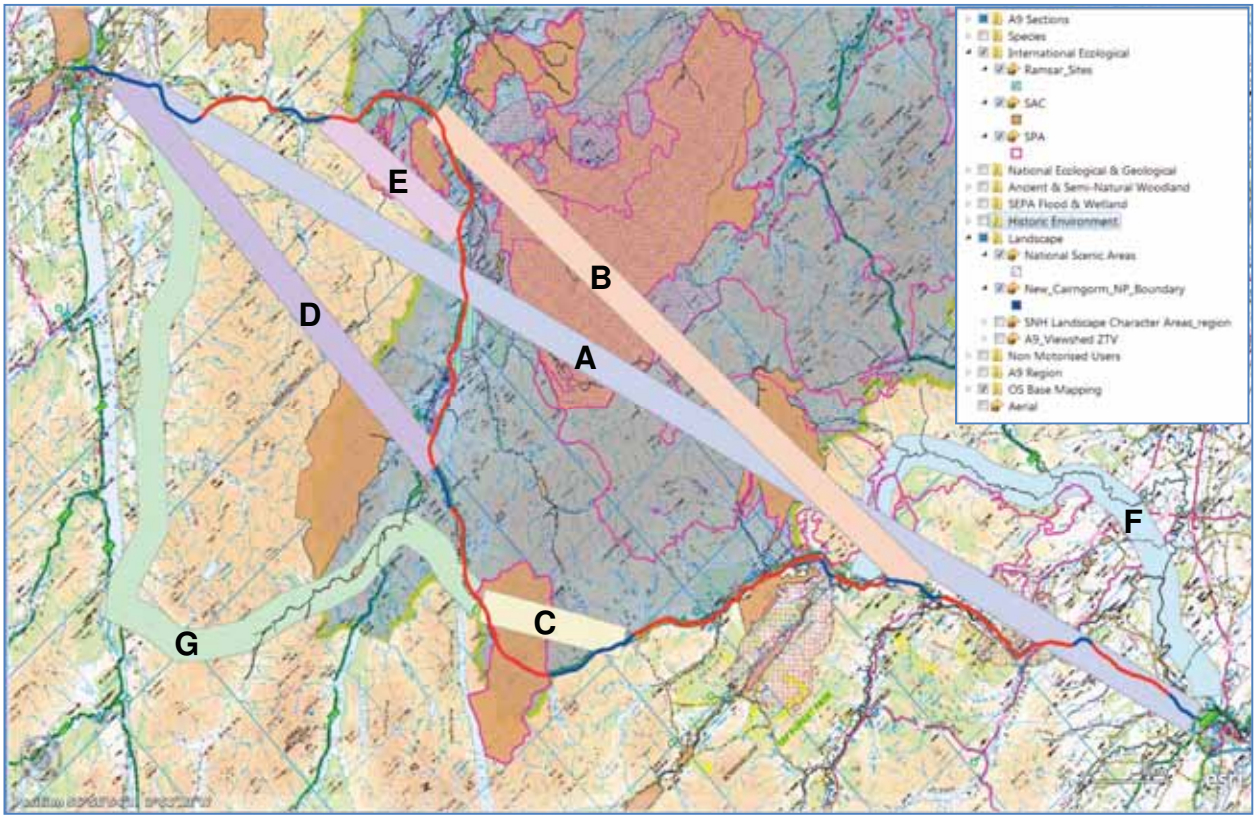

Figure 4-3 Image from GIS analysis for the broad alternative corridors

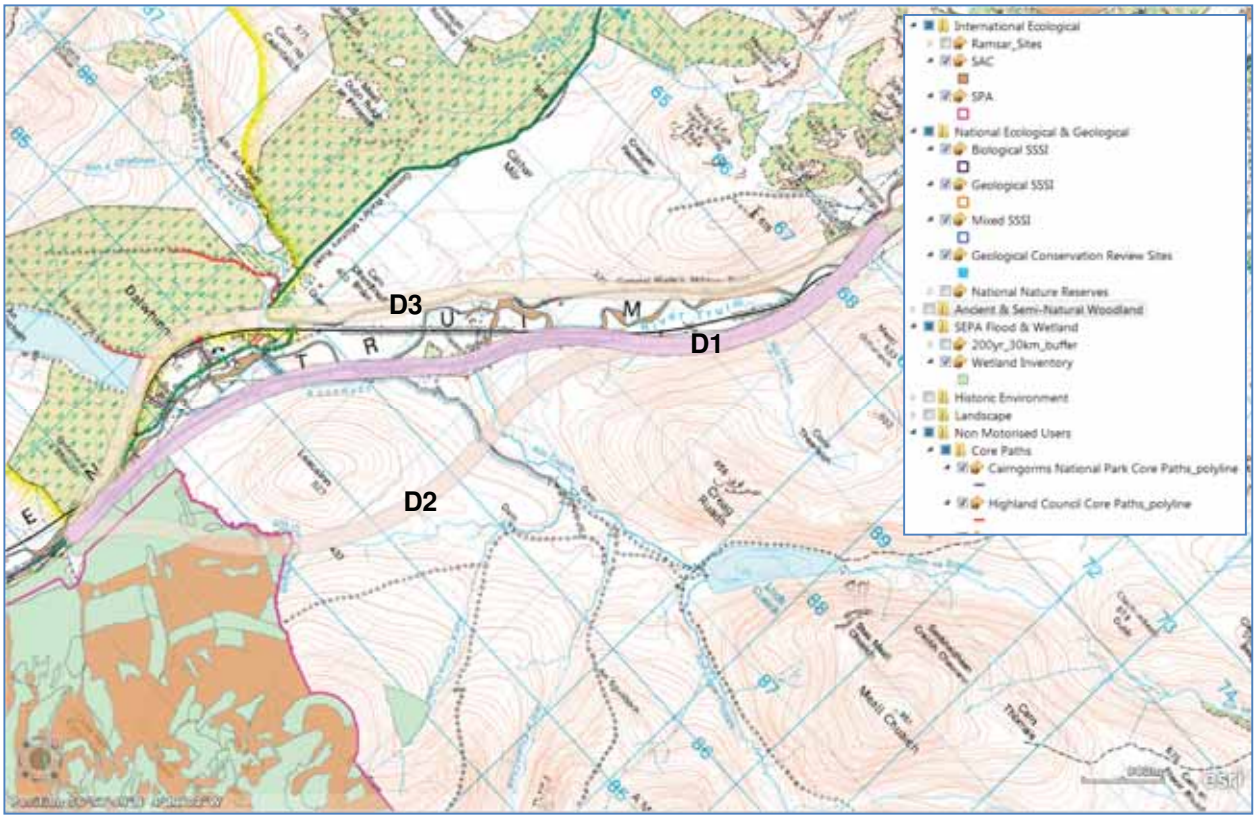

Figure 4-4 Image from GIS analysis for online and near offline options (A9 Section D)

4.3 Online and Near Offline Options

As described in Section 3.2, the existing A9 between Perth and Inverness was divided into six sections, labelled A-F. Within each section, the online corridor is referred to as Option 1 (i.e. online in section B is described as Option B1). Figure 4-4 on the previous page provides a GIS screenshot demonstrating how SEA input to the sifting process was informed.

Table 4.2 lists the range of options considered. It highlights those which were eliminated and those agreed as potentially viable alternatives requiring further SEA consideration.

Table 4.2 Online & Near Offline Options – Option Sifting Results

Option	Description	Sift Decision
Section A – Inveralmond to Tay Crossing		
A1	**Online Inveralmond to Tay Crossing**	**Consider further**
A2	Online to Luncarty, offline to the west and then to the east to Bankfoot, online thereafter	Eliminated
A3	Online to Bankfoot and thereafter offline to the south of Birnam Hill	
A4	Online to Bankfoot then offline to south of railway line and existing trunk road	
A5	Online to Pass of Birnam and thereafter offline to north of Dunkeld and Birnam	
Note: Following the sifting workshop, Option A4 was reworked slightly and is considered through SEA as Option A6		
Section B – Tay Crossing to Bruar		
B1	**Online Tay Crossing to Bruar**	**Consider further**
B2	**Offline west of railway to tie in at Ballinluig, online thereafter**	
B3	Offline west of railway and River Tummel to tie in at Pitlochry, online thereafter	Eliminated
B4	**Online to Pitlochry, offline west of River Tummel to tie in at Blair Atholl**	**Consider further**
B5	**Online to south of Bruar, offline to the west at end of section**	
Section C – Bruar to Dalwhinnie		
C1	**Online Bruar to Dalwhinnie**	**Consider further**
Section D – Dalwhinnie to Newtonmore		
D1	**Online Dalwhinnie to Newtonmore**	**Consider further**
D2	Offline east to south of Crubenmore, online thereafter	Eliminated
D3	Offline west of Dalwhinnie to Crubenmore, online thereafter	
Section E – Newtonmore to Kinveachy		
E1	**Online Newtonmore to Kinveachy**	**Consider further**
E2	Offline north to Kingussie, online thereafter	Eliminated
E3	Online to Kingussie, offline south to Kinveachy	
E4	Online to Kingussie, offline to Aviemore, online thereafter	
E5	Offline south at start of section, online thereafter	
Section F: Kinveachy to Inverness		
F1	**Online Kinveachy to Inverness**	**Consider further**
F2	Offline west of Carrbridge, online thereafter	Eliminated
F3	Online apart from an offline section to the east of Slochd	
F4	Online apart from an offline section between Slochd and Tomatin	
F5	Online apart from an offline section west of A9 at Moy	
F6	Online to Moy, offline to east to Craggiemore, online thereafter	

The Options Sifting Report provides a fuller description of the options and details the reasons why individual options were eliminated. The options that were selected as requiring further consideration through SEA included:

- The online corridor option, divided into six sections (labelled as A1, B1, C1…F1);
- A revised Option A6 in Section A; and
- Options B2, B4 and B5 in Section B.

Figure 4-5 provides an example GIS screenshot image, outlining the online and near offline options to be considered in Section B. Each option is presented as a 200m corridor through a range of environmental constraints.

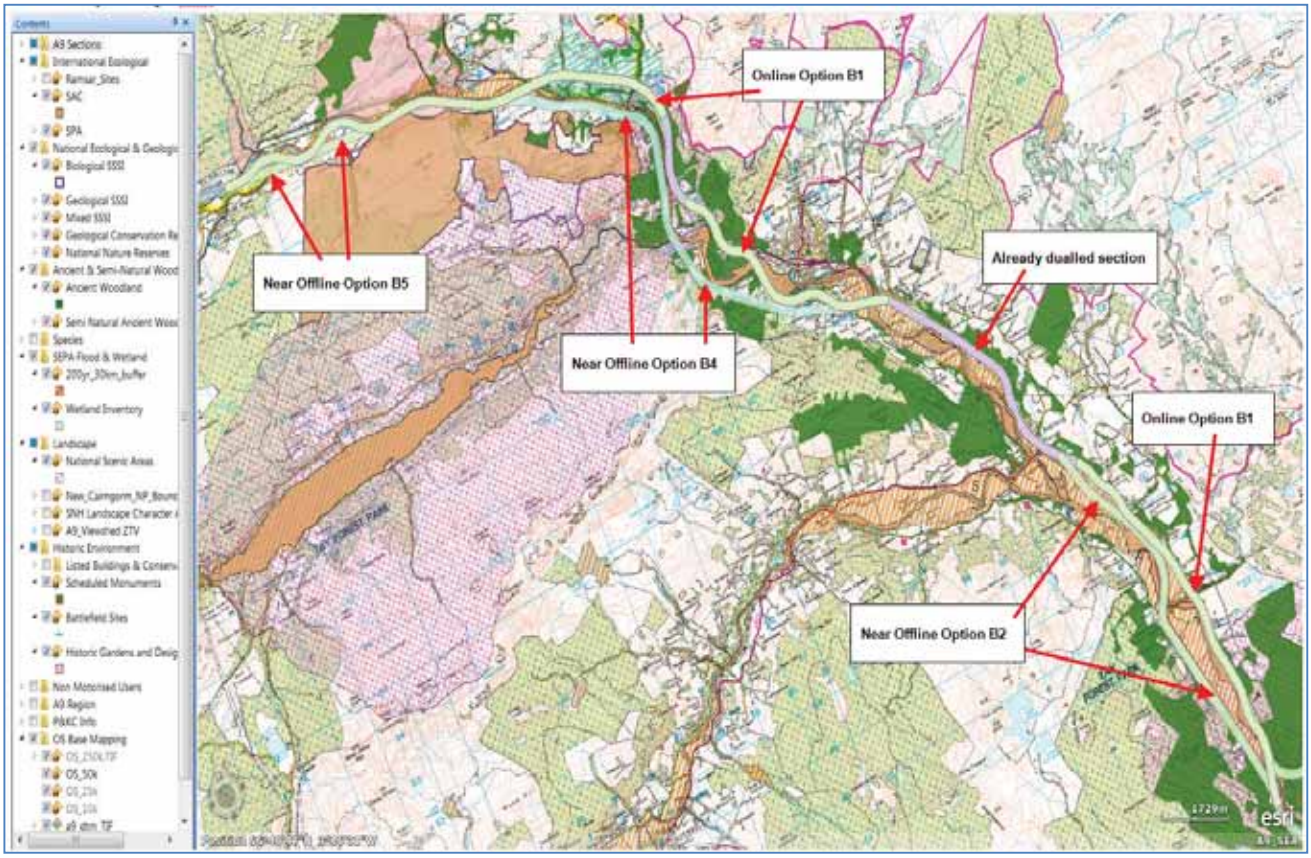

Figure 4-5 GIS Image – Online and near offline corridor options (A9 Section B)

As noted previously, Appendix D to this report provides a full set of printed constraint maps for each of the six A9 sections.

The maps for Sections A and B include the online and near offline options. As the near offline options were discounted in Sections C-F, the maps for those sections show the online corridor only.

The remainder of this Environmental Report documents the assessment of issues and constraints. The assessment has focused principally on the six online corridor sections and comparisons with the near offline options in Sections A and B, which were identified as requiring further consideration.

Where the discussion focuses on particular types of environmental constraints with defined site boundaries (e.g. designated sites, areas of peat/ wetland/ woodland, etc.), the analysis is supported by GIS summary tables.

Table 4.3 explains the range of columns used in the various supporting GIS tables.

Table 4.3 Overview of typical GIS analysis tables used

A9 Section	Feature NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	NEAR DIST	% of A9 Section	% of Total Corridor
Features/ constraints grouped by Section A–F	Identifies the feature/ constraint name, where available n/a used where no name is identified e.g. an area of peat soils/ woodland with no site name	Where any feature is crossed by the 200m corridor, this column quantifies the total area of that particular feature e.g. where a SSSI site boundary is crossed by the corridor the total area of the SSSI site is noted	Quantifies the total area of the 200m corridor crossing the particular feature Gives an indication of the potential area at risk within the corridor	High level ratio presenting the potential area at risk as a percentage of the total feature area Gives an indication of the potential scale of the issue for an individual feature	Notes the distance from the current A9 to the closest point of the identified feature boundary Gives an indication of how near a feature is within the corridor boundary	High level ratio presenting the potential area at risk as a percentage of the corridor section area Gives an indication of the potential scale of a particular issue within a corridor section	High level ratio presenting the potential area at risk as a percentage of the total route wide corridor area Gives an indication of the potential scale of an issue at the route wide level

The GIS tables serve to provide supporting context on the potential scale of an issue, in terms of the area at risk within corridor boundaries, not the importance of the feature or constraint.

The importance, or sensitivity, of a particular feature/ constraint and the significance of potential effects associated with dualling are considered through the discussion text.

Where the discussion provides a comparison between online and near offline options, the following colour key is used for convenience.

Green	Assigned where greater than 10% of a particular feature type is less likely to be affected in terms of comparing the total surface area of each feature within the corridor options
Light Green	Assigned where lower than 10% of a particular feature type is less likely to be affected in terms of comparing the total surface area of each feature within the corridor options
Blue	Assigned where there is no substantial difference between the near offline and online options, in terms of comparing the total surface area of each feature within the corridor options
Orange	Assigned where lower than 10% of a particular feature type is more likely to be affected in terms of comparing the total surface area of each feature within the corridor options
Pink	Assigned where greater than 10% of a particular feature type is more likely to be affected in terms of comparing the total surface area of each feature within the corridor options
Red	Assigned where greater than 100% (i.e. more than double the area) of a particular feature type is more likely to be affected in terms of comparing the total surface area of each feature within the corridor options

5 Detailed Discussion of Constraints and Issues

5.1 Introduction

The A9 is the key north-south trunk road between Perth and Inverness; recognised and valued as a key facilitator route for tourism and economic activity. A9 dualling therefore represents the improvement of a significant regional and national material asset. In SEA terms, this Environmental Report could therefore be seen as an assessment of the inter-relationships between 'Material Assets' and the other SEA topics.

Figure 5-1 aims to help demonstrate this concept by providing a simplified overview of the linkages between SEA topics and issues; where 'Material Assets' is at the centre and the other SEA topics are inter-related. Each physical aspect of A9 dualling will have some influence/ effect on one or more of the linked SEA topics.

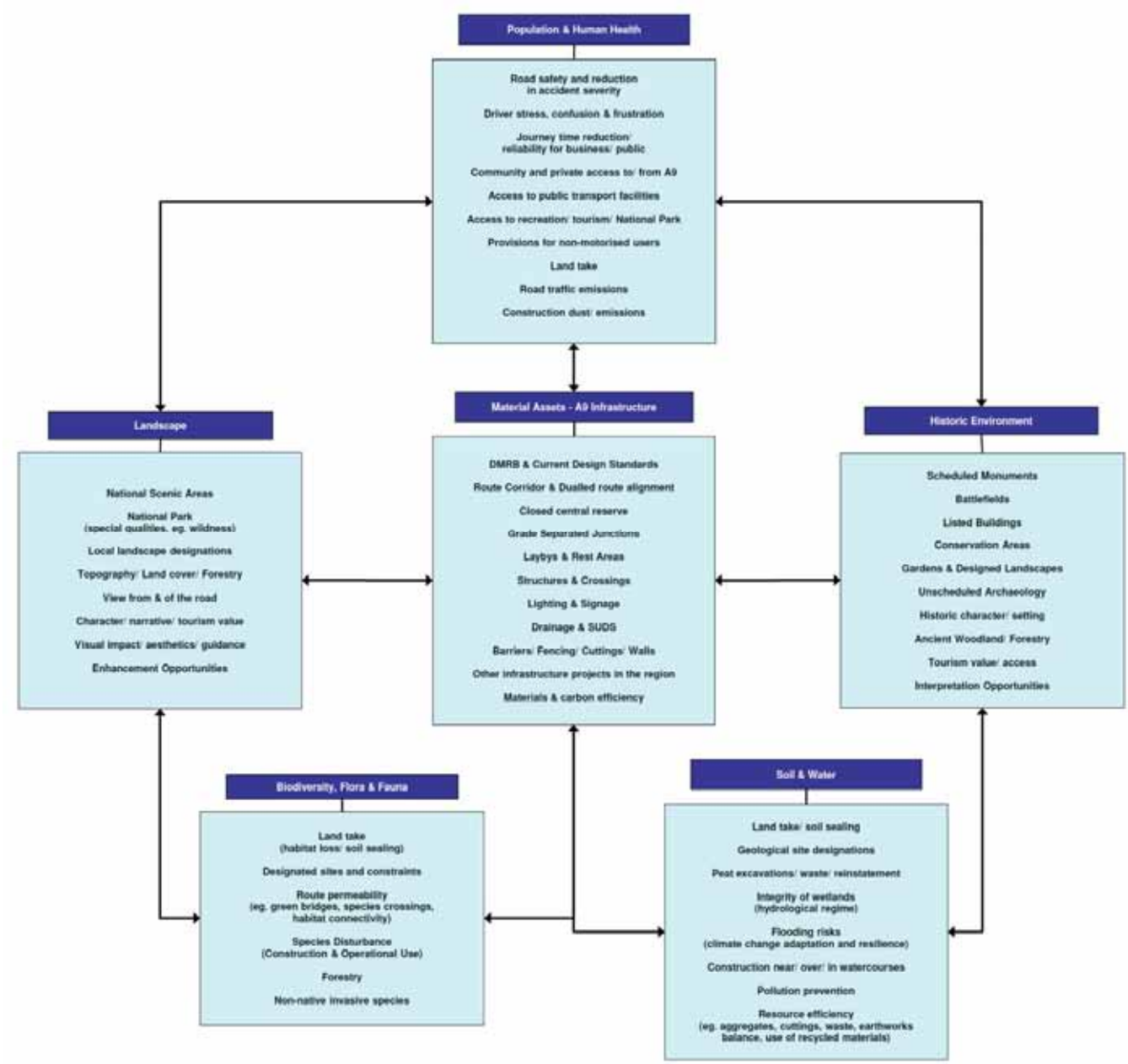

Figure 5-1 Simplified overview of inter-relationships between SEA Topics

The following parts of this section discuss some of the key relationships, topic by topic, using GIS analyses to indicate the relative scale of potential constraints, risks and issues.

The analysis has also been informed by the detailed assessment matrices provided in Appendix C.

To aid the presentation of findings, recommendations and comments on SEA procedural aspects, a number of different coloured boxes are used throughout this section:

SEA Procedural Notes signpost where SEA will give further consideration to certain aspects, during the public consultation period, for possible inclusion within the SEA Post Adoption Statement.
Key Findings summarise the key SEA findings, in terms of the potential significance of effects, informed by the discussion of constraint issues, GIS analyses and the detailed assessment matrices in Appendix C.
SEA Recommendations highlights recommendations for collation at the end of this Report.

5.2 Material Assets – A9 Infrastructure

This sub-section provides a brief overview of some of the key A9 infrastructure features that need to be considered as part of the dualling programme. The intention is to provide some further context for the SEA assessment.

5.2.1 DMRB Design Standards

The Design Manual for Roads and Bridges (DMRB) sets out the current safety and design standards for trunk road development, including aspects such as curve radii, vertical clearances and sight lines, carriageway and verge width, drainage requirements, road layer depth and material options for different road types.

A9 dualling infrastructure will be designed to DMRB standards and revised to reflect relevant DMRB updates between outline/ detailed design and construction stages. The design standard aspiration for A9 dualling is that the route should be designed to deliver a Category 7, All Purpose Dual Carriageway (D2AP), wherever possible.

DMRB requires a phased design process with progressively more detailed environmental assessment to inform:

- DMRB 1 – broad corridor selection, generally informed by desk based identification of constraints and issues (SEA is collating this information);
- DMRB (2) – comparison of a range of alternative route alignments within the preferred corridor, informed by local environmental surveys;
- DMRB (3) – detailed design of a preferred route, with more detailed site level survey and environmental assessment to inform design level mitigation and enhancement measures.

This SEA assumes compliance with DMRB standards across all later A9 dualling route alignment studies and detailed design delivery stages.

Note: All up to date sections and standards within the DMRB can be accessed online at: http://www.dft.gov.uk/ha/standards/dmrb/index.htm

5.2.2 Closed Central Reserve

One of the key safety features of a D2AP route is the general absence of gaps in the central reserve, principally to prevent right turn manoeuvres across the lanes of the dual carriageway.

A9 dualling will provide periodic maintenance gaps in the central reserve which will enable traffic diversions/ contraflows to support maintenance activity and, in the event of accidents/ incidents, appropriate traffic management to minimise disruption and maintain flows.

It should be recognised that a closed central reserve does not necessarily require a solid barrier; therefore, the SEA does not consider a closed central reserve as presenting an additional barrier to movement of species.

In this respect, the SEA considers that, at the strategic level, any additional barrier to the movement of species should be seen as the widened road, not specifically the closed central reserve.

5.2.3 Grade Separated Junctions and Vehicular Accesses

The A9 currently has a range of junction types with A, B and C class roads, as well as unclassified roads, and numerous smaller accesses to farms and estates, businesses and private properties. General closure of the central reserve will also preclude at-grade junctions (e.g. T-junctions, crossroads, level crossings), leading to a need to identify suitable opportunity sites for grade separated junction arrangements (e.g. junctions with slip roads on/ off the mainline, connecting to local roads either above or underneath the mainline level).

The A9 Preliminary Engineering Services (PES) work has developed an outline Junction Strategy. This has been designed effectively as a tool to support decision making in relation to junctions. The SEA team reviewed the general principles for the emerging Junction Strategy and the findings are outlined in Table 5.1 below.

Table 5.1 SEA Review of Emerging Junction Strategy Principles

PES Emerging Junction Strategy Principles	SEA Review Comment
Primary Principles: • Category 7A Dual Carriageway • A & B roads to be maintained unless strong case otherwise • Tier 2 & 3 to be closed	Assessed as highly positive principles in terms of human health and safety Assessed as mixed to negative in terms of population and potential change to current levels of access at the local scale
Areas to consider:	
A and B Roads (Tier 1) –	These principles demonstrate a hierarchy within/ to inform iterative testing and decision making Demonstrates flexibility on alternative solutions, i.e. left in/ out and compact form Grade Separated Junction Demonstrates consideration of junction vs. connector road options Assessed via SEA as: Mixed effects for population depending on change in direct access/ mileage required Mixed on material assets (resource efficiency/ land take requirements) depending on additional connecting works required Further assessment of potential environmental implications required when indicative junction locations, or alternative options, are identified
Is the distance between junctions acceptable? Can 2 junctions be combined into 1? (weaving length – TD 22/06 - >1km)?	
Can a B road be connected into an A road junction? Consider volume of traffic on B Road >500 AADT (DMRB TD 41/95) then a junction should be considered • possible left in, left out arrangement • consider safety issues, • low traffic flow may justify road being closed off	
Junction to be designed in accordance with TD22/06 and TD40/94 (consider safe operation of junction and radius of compact grade separated junction)	
Cost of junction provision versus cost of connector road to be assessed.	
Consider environmental impact/ aesthetics of junction? (Over or under)	SEA recommended that additional issues are clearly specified as material to the consideration of junction options, for example: Lighting issues • will the junction require lighting in a currently unlit area (especially in National Park as they have a policy to support 'dark skies' – lighting, signage and visibility over existing conditions within the park boundaries are key to CNPA) Biodiversity issues • is the junction location outwith a minimum distance from internationally designated sites (distance potentially to be defined in consultation with SNH, possibly on a case-by-case basis) Historic Environment features • Ancient Monuments • Listed Buildings • Battlefield sites SEA advised making these explicit considerations so that they are not missed further down the line

PES Emerging Junction Strategy Principles	SEA Review Comment
C and Unclassified Roads (Tier 2) –	Assuming A & B roads are considered as above, then this maintains access to the A9, via connections Principles demonstrate a hierarchy within/ to inform iterative testing/ decision making Demonstrates flexibility on alternative solutions, i.e. left in/ out Demonstrates consideration of junction vs road diversion options Assessed via SEA as: Minor negative for population with respect to direct access at the local level Mixed on material assets (resource efficiency/ land take) depending on diversionary route works required
Can the road be connected into an A and B road? (close off existing if this is the case)	
Does the volume of traffic justify the need for a junction/ road diversion? >500 AADT (DMRB TD 41/95) then a junction should be considered • possible left in, left out arrangement • low traffic flow may justify road being closed off	
What are the impacts on providing an alternative route? • cost/ benefit • length of diversion, • environmental impacts, • severance impacts and • engineering constraints	SEA recommended that alternative/ connecting route impacts also include specific consideration of changes in lighting requirements
Private/ Access Roads (Tier 3) –	SEA questioned whether there was a need to maintain the left in/ out option in exceptional circumstances; for example where private estate/ business access could be connected with an underpass, unless private left in/ out is discounted on safety reasons, which could over-ride this question Assessed via SEA as: Potential for moderate adverse impacts on members of the local population who may lose direct access (some individuals may find this a highly negative impact)
Can the road be connected into another road? (close off existing if this is the case)	
Consider the standard of road required for access? Vehicle use, underpass size (if required), maintain equivalent standards from existing	
What are the impacts on providing an alternative route? • cost/ benefit • length of diversion, • environmental impacts, • severance impacts and • engineering constraints	
All Roads –	SEA assesses this principle as positive in terms of population, access and inclusion – possible opportunity to compensate for minor road/ route change connections to the A9 via enhancements in lay-bys
Consider: • existing bus routes, • Non Motorised Users, • schools, etc. • possible alternative routes that can be provided	
Consider safety issues: • existing accident rates, • safe operation of junction, • removal of direct access to A9, • type and standard of existing junction	SEA assesses this principle as major positive in terms of human health

Following the review of the emerging Junction Strategy principles, the feedback from the SEA process has been incorporated into a series of assessment matrices which will be used to document the consideration of indicative junction locations.

The PES work on indicative junction locations aims to use the principles and assessment hierarchy to identify broad areas where grade separated junctions might be located to secure the optimum balance between issues.

SEA Procedural Note:

The SEA has not yet assessed the outcomes of the ongoing PES exercise in relation to junctions, however, it is expected that broadly indicative areas for junction locations will be proposed during the SEA Environmental Report (ER) consultation period.

The SEA will consider these during the ER consultation period and include findings and recommendations within the SEA Post Adoption Statement.

Key aspects to be considered include the potential direct and indirect impacts from potential land take required for grade separated junctions.

5.2.4 Lay-Bys

DMRB generally requires the provision of lay-bys every 2.5km on a trunk road and rest area provisions at 45km intervals. At present, a large number of A9 lay-bys are simple roadside bays. The design standard for the dual carriageway requires upgrades to 'Type A' lay-bys which are separated from the main carriageway.

At this early stage in the A9 dualling programme, lay-by locations are not determined as their siting depends on more detailed design of route alignments.

A9 dualling presents an opportunity to review lay-by provisions, potentially linking siting of lay bys to landscape, viewpoint and interpretation opportunities.

The A9 Preliminary Engineering Services (PES) work is developing an emerging Lay-By Strategy. This has been designed as a tool to support decision making in relation to lay-bys. The SEA team reviewed the general principles for the emerging Lay-By Strategy and the findings are outlined in Table 5.2 below.

Table 5.2 SEA Review of Emerging Lay-By Strategy Principles

PES Emerging Lay-By Strategy Principles	SEA Review Comment
All Lay-bys:	Assessed via SEA as positive in terms of population and human health, road safety
Identify existing location of formal and informal lay-bys Identify need for new lay-by	
Bus Lay-bys:	Assessed via SEA as positive in terms of population and human health, public transport, non-motorised user access and inclusion
Consider current bus lay-by provision Consider bus routes	
Recreational Lay-bys:	Assessed via SEA as positive in terms of population and human health, outdoor access and recreation Core paths, cycle routes and areas used by equestrians have been collated by the PES team to inform a baseline on non motorised user use and A9 crossing points SEA recommended including the consideration of opportunity sites for 'enhanced' lay-bys near key viewpoint locations
Consider current provisions for hill walkers Consider new sites for lay-bys taking into account distance from known hill walking spots as well as areas with scenic views Consider adjacencies to Core Paths Consider adjacencies to cycle routes Consider adjacencies to other recreational facilities	

PES Emerging Lay-By Strategy Principles	SEA Review Comment
Areas to consider:	
All Lay-bys:	
Visibility on the exit from lay-bys (TD 69/07, Para 3.4) must conform to the requirements for a major/ minor junction as set out in TD 42 (DMRB 6.2.6).	These aspects of the emerging lay-by strategy principles are generally based on technical standards and SEA considers them all highly positive in terms of human health and road safety SEA also considers specific reference to the DDA good practice guide a highly positive measure in terms of population, inclusion and access SEA advised that considerations should include options on opportunity sites for visitors/ viewpoints in determining lay-by locations Such locations would likely require agreement with the CNPA within National Park boundaries SEA suggested that there could be value in defining an 'enhanced' lay-by type which might accommodate additional space for interpretation or art features, and be located in areas close to key views Such enhanced lay-bys may be over and above technical standards and may require approval from Transport Scotland's technical standards branch SEA also highlighted that any considerations on the locations of lay-bys need to clearly document inclusion of environmental constraints, e.g. historic environment and ecological constraints
Drivers approaching a lay-by along the major road must be able to see vehicles entering or exiting the lay-by (DMRB TS 69/07, Para 3.5) for a distance corresponding to the Desirable Minimum Stopping Sight Distance for the design speed of the major road, as described in TD 9 (DMRB 6.1.1). This visibility allows drivers on the major road to be aware of traffic entering or exiting the lay-by in time for them to be able to slow down and stop safely if necessary.	
Lay-bys must not be combined with junctions or accesses (DMRB TD 69/07, Para 3.8).	
The parking area must be 3.5m (DMRB TD 69/07, Para 4.5) wide to accommodate large good vehicles. However, as stated in the Disability Discrimination Act (DDA): Good Practice Guide for Roads, Transport Scotland requires enhancements to be made which alter this minimum width to 3.6m.	
The overall layout of the lay-bys should be based upon DMRB TD 69/07 Chapter 4 & 5 with any suggested enhancements made within the Disability Discrimination Act: Good Practice Guide for Roads incorporated.	
Lay-bys must be treated as junctions (DMRB 69/07, Para 3.6) in relation to DMRB TD 9/93 concerning limitations on relaxations on a junction approach, as well as the restriction on siting within one kilometre of the end of a section of dual carriageway.	
Separation between lay-bys and junctions or accesses must be at least 3.75V metres (TD 69/07, Para 3.7), where "V" is the design speed of the road. For a grade separated junction the separation requirement is as per TD22 (minimum separation of 1km on rural roads).	
Is the distance between lay-bys acceptable? [2.5km recommended (TD 69/07 Table 3-2) on Dual Carriageway sections]	
Is there an appropriate location to place a new lay-by?	
Can a lay-by be accommodated which meets the requirements of both the DMRB and DDA guidance?	

Following the review of the emerging Lay-By Strategy principles, the feedback was incorporated into a series of assessment matrices which will be used to document the consideration of lay-by locations on later design schemes.

SEA Procedural Note:

This SEA is considering route-wide issues and the potential constraints within the boundaries of the identified corridors. As such, it cannot provide any detailed assessment on the potential siting/ location of lay-bys as the route alignment remains undetermined at this stage.

The SEA will review the outcomes of the emerging Lay-By Strategy during the SEA Environmental Report consultation period.

Any updated findings and recommendations will be included with the SEA Post Adoption Statement.

5.2.5 Structures and Crossings

A9 dualling will remove at grade junctions, as well as current at grade crossing points used by pedestrians and other non-motorised users. Additional, or widened, crossings will be required for watercourses, other roads, rail lines, pedestrians and non-motorised user accesses. SEA has not considered the location or form of structures and crossings, as these will be developed during the more detailed route alignment studies and design phases.

A preference for underpasses, rather than overbridges, has been stated by SNH and the Cairngorms National Park Authority. SEA considers that underpasses would be more likely to minimise the visual impact of crossings, when compared with overbridges, as well as providing safer crossings for a range of non-motorised users and local biodiversity.

> ***SEA recommends*** *that, in terms of minimising visual impacts and ensuring high quality design of structures, which respect and reflect the locally changing character of the A9 route, early consultations take place with key stakeholders to determine strategic design principles and guidance.*
>
> ***SEA recommends*** *a preference for underpass crossings, rather than overbridges, wherever possible, to minimise visual intrusion to the surrounding landscape and to provide safer crossing opportunities for humans and local mobile species.*

SEA also recognises that, given the number of current at grade crossing points, it will prove impractical to provide underpasses at each and every current crossing point. This is a key factor to be considered via an emerging Non Motorised User (NMU) Strategy, currently being developed as part of the A9 PES work.

The emerging NMU Strategy aims to develop a baseline on the use of key paths/ NMU routes and A9 crossing points. This will inform a decision making hierarchy on the potential for rationalisation of current NMU crossing points to provide fewer, but safer, crossings (preferably underpass). Such rationalisation of crossing points will lead to some NMU routes being re-routed/ lengthened to tie in with safer crossing points.

The total number of NMU crossing points may be reduced, which can potentially be seen as presenting negative effects in terms of population and access. However, given the overarching safety benefits and the fact that overall connectivity between NMU routes will be retained (even if some are rerouted/ lengthened to meet crossing points), SEA considers the development of the emerging NMU Strategy as a positive measure.

SEA Procedural Note:

The SEA will review the outcomes of the emerging Non Motorised User (NMU) Strategy during the SEA Environmental Report consultation period.

Any updated findings and recommendations will be included with the SEA Post Adoption Statement.

5.2.6 Lighting and Signage

Much of the A9 is currently unlit but, given that A9 dualling will remove at grade junctions, in favour of grade separated junctions, there is the potential that lighting may be introduced into areas where junction standards require lighting for safety purposes.

This may have implications for biodiversity and visual impact, especially in areas where dark skies are considered a valued feature of the landscape, and where lighting might impact upon areas valued as wild land (i.e. the introduction of man-made lighting could impact upon perceived wildness).

> ***SEA recommends*** *that a general strategic principle on the avoidance of lighting on the A9 mainline be adopted, except where absolutely required by safety standards. This principle should also apply to the consideration of signage requirements, with a preference for unlit signs wherever possible.*
>
> ***SEA recommends*** *that detailed consideration be given to the viability and reliability, in terms of safety requirements, of automatic lighting controls on the A9, such that in the absence of vehicle movements, junction lighting is dimmed or switched off.*
> *This would require consultation with key stakeholders to determine whether automatic switching on/ off could be considered a nuisance in some locations; however, it could also provide long term benefits in terms of limiting energy consumption.*

Given the importance of the A9 to tourism and providing access to Scottish cultural heritage, there is a requirement to provide bi-lingual route signage (English and Gaelic). Bi-lingual signs are expected to be in the region of 20-40% taller and up to 25% broader than standard road signs, depending on the type of sign required.

The SEA identifies careful placement to avoid detrimental effects on landscape and visual aspects as a key issue in respect of signage, however, it is recognised that safety standards may dictate sign placement in some locations.

> ***SEA recommends*** *that a general strategic principle on the avoidance of overhead signage and gantry structures be adopted, except where absolutely required by safety standards.*
>
> ***SEA recommends*** *that a signage strategy should be considered to develop strategic guidance on sign placement; in order to avoid placing signs in locations that would present detrimental visual intrusion on important views from the road.*

5.2.7 Drainage and Sustainable Drainage Systems (SUDS)

The Water Environment and Water Services (Scotland) Act 2003 (WEWS) requires planning authorities to work to prevent deterioration and promote improvements in Scotland's water environment. Ensuring developments are provided with appropriate SUDS is one of the key ways in which SEPA consider authorities can discharge WEWS duties.

With respect to A9 dualling, upgraded sections will be designed and constructed to meet current drainage standards, including SUDS provisions. SEA considers that this provides a significant enhancement opportunity for the water environment/ water quality when implemented across the route length.

The A9 single carriageway sections have been in place for a number of years and, whilst they will have been designed to the applicable standards at the time of construction, they are likely to have surface water drainage arrangements which do not incorporate considerable retention or settlement of road surface runoff material.

Incorporating SUDS along the length of the newly dualled sections will help ensure effective retention and settlement of surface water runoff before discharge, with a likely reduction in pollutant levels in the discharge. When considered cumulatively over the 129km to be dualled, SEA assesses this factor as representing a significant improvement over current conditions, especially over the long term future operation of the route.

Trunk road SUDS features will not be adopted by Scottish Water, instead they will remain the responsibility of Transport Scotland and will be maintained by the relevant trunk road operating company. Given that the A9 is a rural trunk road, there is a need to incorporate high quality, landscape driven design when considering any large, visible SUDS features such as retention ponds/ detention basins. SEA considers that this approach will be more likely to minimise the visual effect of SUDS features and deliver greater potential for secondary benefits in terms of ecological enhancement and habitat creation.

Another factor to be incorporated into drainage designs is the separation of road surface drainage (via SUDS) from the surrounding environmental surface water runoff. Surface water draining from hillsides, cuttings or fields around the A9 should be kept separate from SUDS features designed for the management of road surface water drainage (to limit inundation in heavy rainfall). Outfalls for environmental drainage need not be treated via SUDS, but should be carefully designed to prevent erosion.

Current guidance indicates that road schemes typically require two levels of SUDS treatment before discharge to the receiving water environment. However, it is also understood that in some cases where SUDS discharge into a Special Area of Conservation (SAC) designated area, three levels of SUDS treatment may be required.

SEA also considers that the improvement of drainage provisions along the route will provide additional/ enhanced opportunities for mobile species to cross the road, thereby reducing the potential barrier effects of a widened road. In areas where later design stage surveys identify mobile species activity, or around areas designated for relevant species such as otter, then enhancement measures should be incorporated into drainage designs including larger pipes/ culverts and mammal ledges. Such requirements should be defined by ecology specialists.

Whilst separation of environmental runoff and road surface runoff, via SUDS, is expected to deliver water quality, connectivity and ecological benefits, the scale of A9 dualling means there are a number of associated issues that need to be considered at the strategic level:

1. The Tay and Spey rivers and tributaries are designated as SAC and it is likely that, as the A9 and the rivers are in the same confined area, A9 SUDS will outfall to one of these SAC designations over much of the route length. Should three levels of SUDS treatment be required along the entire route, the associated creation of SUDS ponds could result in a visual effect on the landscape, even if sympathetic design of ponds is incorporated.
2. Given the topography of the area and the fact that drainage (road or environmental) will be gravity based, the lowest drainage point in some A9 sections will lie in the 200yr indicative flood risk zone. This raises an issue in respect of the location of SUDS ponds in the flood zone if no other location, or SUDS treatment, is suitable. The risk is that during a flood event, the SUDS pond is inundated and settled road surface runoff material is flushed from the pond. Site level mitigation such as bunding/ walls could help minimise this risk, however, the wider issue needs further discussion and agreement with the statutory bodies at the strategic level.

Key Findings:

SEA considers that the improvement of A9 drainage, with incorporation of SUDS, will present:

– Minor local benefits, aggregating up to a **moderate regional benefit,** with respect to long term improvements to discharge water quality

– Minor local benefits, potentially aggregating up to a **moderate regional benefit,** with respect to provision of crossing opportunities, habitat connectivity, limiting barrier effects and potential habitat creation for biodiversity

– Mixed effects in terms of landscape and visual issues, where sympathetic design of individual SUDS features could be an enhancement/ present minimal issues locally, but where a large number of SUDS features could have a noticeable effect on regional character

SEA recommends *that a general strategic principle on the separation of road surface runoff from surrounding environmental surface water runoff is adopted.*

SEA recommends *that A9 SUDS design is informed by landscape and ecological specialists to secure maximum additional benefits in terms of integration within the surrounding landscape, minimising visual impact and delivering ecological enhancement. A specific strategic study to provide A9 SUDS design guidance would support a consistent approach along the route.*

SEA recommends *detailed consultation with SEPA, SNH and other key stakeholders to specifically consider the issues and risks around SUDS, to provide strategic design guidance on the levels of treatment required before discharge to SAC designated areas, and to agree guidance on SUDS in the flood zone.*

5.2.8 Walls, Fencing, Cuttings and Barriers

Local level design choices and specifics on this range of roadside features are usually considered via the DMRB Stage 3 detailed designs, with some flexibility even at construction stage on the materials to be used to meet safety performance specifications. However, SEA has identified key strategic issues for consideration.

Walls

The selection of facing or cladding materials for walls is important when considering landscape and visual effects across the route. As the local landscape/ historic character changes along the route, there is a need to consider guidance on the specification of materials to respect, reflect and blend with the local character/ local vernacular. There may also be opportunities to reinstate boundary features, e.g. drystone walls, as local mitigation/ enhancement measures which may have secondary benefits for lower species such as lichens.

Fencing

There are potentially a range of issues specifically around deer fencing.

Deer populations are found across the A9 corridor and are a recognised risk in terms of vehicle collisions. In this context, SEA considers the risk as more applicable to human safety than effects on deer populations. A recent SNH commissioned study[1] on deer and vehicle collisions (DVC) reported 270 incidents between Perth and Inverness over the 2007-11 study period. The findings of the DVC report stated:

"Greatest local concentrations of DVCs commonly occur where roads run through or close to woodland, but are by no means restricted to such areas; and it is clear from this general overview that some level of DVC risk occurs on almost any trunk and non-trunk road throughout the region.

A number of areas of elevated DVC risk were identified; including in particular:

***A9**: vicinity of Dunkeld; Blair Atholl; and Tomatin–Moy–Craggie*

These sections may be among the most important initial areas to look into in some further detail.

However, it is also apparent from the distribution of known incidents, and in particular with respect to the A9, that deer collisions are a common occurrence throughout much of that entire route.

It would seem useful therefore if at an early stage during the road improvement design phase a limited field 'scoping survey' may be possible to put in place (possibly to include brief sites visits for selected parts along the entire route).

Aims of such scoping survey might include on site inspection not only along some of the known DVC hotspots, but assessing briefly also other areas to help judge where else future deer problems are likely to arise, as well as where there may be potential for cost-efficient mitigation measures. For example, such as adaptation of existing viaducts or other planned road or river under / overpass structures, that may have potential for increasing suitability as safer passages for deer and other wildlife through appropriate lead-in fencing or landscaping that might readily be incorporated within the design of other planned road improvements at little add-on cost."

[1] Reported deer road casualties and/ or related traffic accidents 2007-2011 on the A9 Perth – Inverness, A96 Aberdeen to Inverness , and A90 Perth to Aberdeen. Prepared for SNH by Dr J Langbein, April 2012 – Copy provided by SNH

SEA considers that the key issues around deer crossings and deer fencing include:

1. Design planning to accommodate deer crossings
   A9 dualling may increase the number of pedestrian subways and underpasses for NMU provisions, as well as for grade separated junctions. Overall, there may be a greater range of underpass crossing opportunities when compared with existing provisions; however, there is no guarantee that deer will use these crossings. As stated in the DVC report summary, there may be value in conducting surveys at the local level, particularly around the noted hotspot locations and the key issue is to ensure that all crossing points are considered for multiple uses (including deer) through careful design.
2. Level of deer fencing potentially required to direct deer to crossing points
   Deer fencing could be considered at DMRB Stage 3, detailed design and environmental assessment stage, as one option to direct deer towards safer crossing points; however, the risk of fencing trapping animals within the road corridor needs to be taken into account.
3. Potential for Capercaillie impacts through fence collisions
   The Capercaillie Life Project website (http://www.capercaillie-life.info/htm/capercaillie_decline_causes.php) states…
   "*…collision with wire fences is perhaps the major cause of capercaillie mortality – accounting for 24% of juveniles and 8% of adults. Internal woodland deer fences are particularly dangerous but all forms of fencing can be fatal. Marking fences with wooden palings or orange barrier netting can help to reduce collisions but a move away from reliance on fences to other forms of deer control is required*".
4. Landscape and visual effects of deer fencing
   Extensive use of fencing to direct deer to crossings (especially coloured fencing in capercaillie areas) is likely to present detrimental effects in terms of visual impact. Other landscaping measures may be preferable.
5. Road boundary alternatives to fencing
   There may be opportunities to reduce DVC risks via measures that reduce the attractiveness of roadside vegetation. Similarly, wider boundaries with some tree removal in certain areas could limit the roadside cover for deer, and give drivers more time to see and react to any deer encroaching onto the road.
6. Long term change in deer movement/ crossing points due to climate change adaptation
   This issue presents a tension between fixed transport infrastructure and the potential provision and location of additional crossing points, on the basis of long term change in deer movement patterns.

SEA considers that, at the strategic level, the cumulative increase in provision of underpasses, water, road and rail crossings along the route should be beneficial for deer, providing that designs proactively consider accommodating deer (and other species). Further consultation with key stakeholders/ specialists at the detailed design and environmental assessment stage would be of value, particularly in the areas identified as hotspots for DVC.

SEA recommends *that, given the issues noted above, deer crossings and fencing should be considered further at the more detailed design and local environmental assessment level. Locally balanced solutions should be informed by local landscape character, best practice guidance and consultation with key stakeholders and specialists.*

Cuttings

A9 dualling will require additional cuttings to accommodate a wider road, and there are a range of challenges and opportunities to be considered.

The principal factor will be design of cuttings to meet safety standards on sightlines, curve radii and verge/ boundary clearance; however, there is an opportunity to develop strategic design guidance on the aesthetic quality required. For example, use of measures that result in more natural looking cuttings and avoid visible signs of cutting activity, such as drill barrel imprints in the exposed rock face, may be preferable.

There are also likely to be local opportunities to use A9 cutting activity to expose features of geodiversity interest; potentially as a local enhancement measure. Such opportunities should be explored further at the detailed design and local environmental assessment stages, in consultation with SNH and other key stakeholders, such as local RIGS groups.

The key stretch along the route where such opportunities may exist is the area north of Pitagowan/ Struan up to the currently dualled section in Glen Garry. Various parts along this stretch are designated under the Glen Garry SSSI (Geological) and the A9 Cuttings and River Garry Geological Conservation Review (GCR) area.

Where cuttings are agreed to expose geodiversity interest features, these locations should also help inform local placement of lay-bys and pedestrian subways to ensure safe access to the interest features.

There are geological SSSI designations around Loch Etteridge and the Littlemill Fluvio-Glacial Landforms; however, the A9 is already dualled in these areas.

There is another GCR site at The Slochd which may also present opportunities; however the GCR site at Allt Dubhaig is within the Drumochter Hills SSSI, SPA and SAC boundaries, so would not be considered an opportunity area.

> ***SEA recommends*** *that strategic design guidance includes principles on aesthetic quality requirements for cuttings, to minimise the residual visual effects of cutting activity.*
>
> ***SEA recommends*** *that detailed design and local environmental assessment, for schemes in the area between Pitagowan and the current dual carriageway in Glen Garry, consult with SNH and other key stakeholders on the potential opportunities for cutting activity to expose features of geodiversity interest.*
> *There may also be opportunities around The Slochd GCR site.*

Barriers

Decisions on the material form of central or roadside barriers are usually taken in the later stages of the design process but, given the range of sensitive landscape and visual impact issues around A9 dualling, there could be early consideration to identify a range of barrier types that will meet safety requirements and present the minimal visual impact.

There could also be a general presumption against the use of solid concrete barriers, except where absolutely necessary for safety reasons. This would help limit potential barrier effects for mobile species that continue to cross at the road surface.

SEA recognises that under CDM (Construction Design and Management) regulations, designers are obliged to develop safe solutions, and that concrete barriers are often preferred on high speed roads. Concrete barriers are (1) very strong, (2) less likely to require repairs if hit, (3) likely to reduce lane closures for barrier replacement, (4) safer for road workers. As such, a balance needs to be struck between safety, biodiversity and visual impact considerations.

> ***SEA recommends*** *that consultations take place with the Cairngorms National Park Authority (CNPA) and SNH to determine a range of acceptable barrier options, to provide guidance for later design and construction stages, bearing in mind the potential restrictions of European public procurement requirements which may prevent the specification of a particular product.*

5.2.9 Material Resources

Road design and construction best practice requires the optimisation of a cut and fill balance, where materials excavated are re-used to fill in suitable areas, to minimise waste disposal and deliver cost efficiencies. Ideally, A9 dualling could consider cut and fill balancing along the entire route; however, this is unlikely given the potential for different sections to come to construction at different times (i.e. likely to be constrained by construction phasing).

Peat excavations will also be required at some points along the A9, presenting additional specific issues on hydrological and ecological integrity, carbon release and restoration/ reinstatement plans at the local level.

In terms of construction materials, A9 dualling will require significant quantities of aggregates, bitumen/ asphalt and concrete as key materials. Transport Scotland has been working with the construction supply chain to develop material specifications which improve recycled content. Transport Scotland has also been working on surfacing material specifications which deliver improved durability and longer life performance.

5.2.9.1 Waste

Re-use of site-won materials (e.g. from excavations) will be maximised, as per construction best practice to minimise waste. In a situation where two A9 construction schemes are underway, but separated by some distance, current waste regulations could treat any removal from one site to another distant site as a waste transfer.

> ***SEA recommends*** *strategic programme level discussions with SEPA to investigate potential mechanisms to support material resource efficiency along the route, for example, temporary depots for excavated material, etc.*
>
> ***SEA recommends*** *that Site Waste Management Plans are adopted as best practice across all A9 dualling schemes.*

5.2.9.2 Carbon

SEA considers that, given the overall scale of the linear development, A9 dualling will result in a significant embodied carbon footprint. No footprint estimates have been developed at this stage; however, given that the design performance life of the road will be in the order of 40-60 years, the measures noted above to deliver construction resource efficiency, improved durability and long life performance will help to limit the whole life footprint.

The choice of construction materials, supply source and construction method can also affect the total carbon footprint. A9 dualling presents an opportunity to specify/ maximise use of recycled products which meet safety performance requirements and do not increase the overall footprint when compared with locally sourced, non-recycled products.

Recent Transport Scotland research on maintenance activities identified effective road drainage as a key factor in maximising the performance life of a road and minimising structural maintenance requirements. As noted above, Transport Scotland has derived a specification for improved durability and long life surfacing materials. A9 dualling will improve drainage to current standards on upgraded sections and include the new TS2010 surface material specification. As such, fewer maintenance interventions and reduced whole life carbon impacts may be expected.

Other than power consumption for lighting and signage, there will be no carbon emissions from the A9 itself during operation. Operational lifetime emissions will be related to traffic use; however, long term trends in engine performance and traffic emissions would be considered outwith the boundary of control of the A9 Dualling Programme.

Key Findings:

SEA considers that *online* dualling will minimise material consumption through retained use of existing infrastructure; leading to potentially **moderate adverse effects** in terms of consumption of local material resources and the associated embodied carbon footprint. Alternative routes and offline dualling would increase consumption and carbon effects.

Use of local material suppliers would likely provide local population benefits, and help to minimise the overall footprint in terms emissions associated with material transportation.

***SEA recommends** that, wherever possible, A9 dualling uses locally sourced materials and suppliers, to reduce material transport emissions and to support local businesses.*

5.2.9.3 Adaptation and Resilience

The Climate Change (Scotland) Act requires that adaptation and resilience to climate change are integrated within transport sector and infrastructure plans. SEA considers that A9 dualling will improve resilience to extreme weather and flooding risks through the design of new structures, crossings, junctions, drainage capacity, SUDS and road surfaces to current standards and tolerances. Winter resilience will remain an issue on higher parts of the route; however, a dualled route will improve operational flexibility.

5.2.10 Other Transport Infrastructure in the Region

5.2.10.1 Non-trunk road infrastructure

There are likely to be a range of local authority non-trunk road transport projects that interface with the A9 route between Perth and Inverness, over the period to 2025. These should be considered in more detail via later route alignment and local environmental assessment stages, as they could influence final decisions on A9 junction locations and any potential connecting routes required.

The preferred route alignments selected for A9 dualling will need to tie in with A, B and C class roads and any connecting routes, identified by Local Authorities as potential developments, should be highlighted early in the A9 DMRB Stage 2 route alignment study phases to inform junction siting decisions.

There will also be a range of local authority/ national park development planning land allocations for housing or employment land along the A9 route between Perth and Inverness, over the period to 2025. These could also affect non-trunk road developments and A9 dualling decisions on junction locations. Similarly, the preferred route alignment selected for A9 dualling could affect longer-term land allocations, in terms of integrating land use and transport planning.

> ***SEA recommends*** *that consultations take place with the relevant Local Authorities and Cairngorms National Park Authority (CNPA) to determine where any planned non-trunk road projects and development plan land allocations need to be taken into account, in DMRB Stage 2 route alignment studies, to inform final decisions on junction locations and connecting roads.*

5.2.10.2 Highland Mainline (HML)

The Strategic Transport Projects Review promoted A9 dualling as part of a corridor solution that also included upgrading the Highland Mainline (HML) to improve freight services, as well as passenger transport mode options. The table below describes where the HML crosses and runs close to the A9 in each of the six A9 study sections.

Table 5.3 Baseline GIS – Highland Main Line Railway (HML) Route

A9 Section	NEAR_DIST	Comment
Section A	0.0	The HML runs along the eastern side of the A9 dual carriageway section as they leave Perth before diverging to the east at Luncarty. The HML then returns to cross the dual carriageway section at Pass of Birnam (the zero near distance indicates a crossing point), and then runs along the western side of the A9 through Dunkeld and Birnam before crossing the A9 north of Dunkeld, near the Hermitage. There are 3 crossings in Section A and the HML lies within the 200m wide corridor for approx. 6.6km; however, over 3.4km is around already dualled sections.
High level comparison with near offline Option A6		Option A6 is on the other side of the HML from the existing A9 moving north from the Pass of Birnam dual carriageway section. It would require an additional crossing just north of the Pass of Birnam dual carriageway, around Birnam Wood.

A9 Section	NEAR_DIST	Comment
Section B	0.0	The HML crosses the A9 at the start of this section, running to the western side before crossing the dual carriageway section before Pitlochry. The HML runs to the east before crossing the A9 on the approach to the Pass of Killiecrankie, running west of the road before crossing the A9 on the approach to Blair Atholl. From there it runs to the north of the road before a crossing at the end of this section around Pitagowan. There are five crossings in Section B and approx. 10.9km of the HML lies within the 200m wide corridor; however, over 6.2km is around already dualled sections.
High level comparison with near offline Option B2		Option B2 is on the other side of the HML from the existing A9 moving north from the start of this section. It would require two new HML crossings, one at the start of the section, and another to tie back into the current dualled carriageway section at Ballinluig.
High level comparison with near offline Option B4		Option B4 separates from the online corridor at the end of the dual carriageway section just before Pitlochry and runs along the opposite side of Loch Faskally, Killiecrankie Gorge and the HML, tying back into the A9 just south of Blair Atholl. Would not require additional crossings of the HML.
High level comparison with near offline Option B5		Option B5 is a short option to straighten bends in the online corridor at the north end of this section; there are no significant differences from the online corridor with respect to the HML.
Section C	13	The HML runs along the western side of the A9 along the length of Section C, with no crossings in this section. Approx. 9km of the HML lies within the 200m wide corridor with the closest point less than 15m from the A9 single carriageway. Over 6km is around already dualled sections.
Section D	16.5	The HML runs along the western side of the A9 along the length of Section D, with no crossings in this section. Approx. 6km of the HML lies within the 200m wide corridor with the closest point less than 20m from the A9 single carriageway. Over 4km is around already dualled sections.
Section E	0.0	The HML runs along the western side of the A9 from the end point of Section D, until it crosses the A9 at Kingussie. From Kingussie the HML runs along the eastern side of the A9 with no further crossings. Approx. 5km of the HML lies within the 200m wide corridor at Section E.
Section F	0.0	North of Aviemore, the HML runs to the east of the A9 before crossing the single carriageway at Slochd. The HML runs to the west of the A9 before crossing the single carriageway between Dalmagarry and Moy, where it diverges off to the east before returning on the approach to Inverness. There are two crossings in Section F and approx. 12.6km of the HML lies within the 200m wide corridor, however, over 3.6km is around already dualled sections.

The Highland Mainline Improvements Project team is working with Network Rail to identify possible locations for improved passing loops on the line; however, no information on potential locations is available for consideration through the SEA.

As the A9 and the HML share the same broad corridor between Perth and Inverness, there is the potential for cumulative environmental effects between A9 dualling and HML passing loops. The risk of cumulative impacts, such as construction noise, would be considered higher if works on both are scheduled at the same time in close proximity to each other.

Construction in similar locations, but scheduled with reasonable periods between works, would present lower risks for some cumulative effects, but could still present cumulative impacts in terms of the land take required and the sensitivity of environmental features/ receptors in the area around works locations.

In the absence of spatial or programming information on the HML project, SEA must adopt a precautionary approach and assume there is potentially significant risk of cumulative adverse effects between the HML and A9 dualling, as both transport infrastructure routes share the same narrow corridor (to provide some context, there are approximately 26km where current A9 single carriageway sections and the HML are within 100m of each other).

SEA Procedural Note:

The SEA team will make contact with the Highland Mainline Improvements Project team, during the SEA Environmental Report consultation period, to determine whether option sites for HML passing loops have been identified in the interim period. If so, the sites will be considered in a more detailed cumulative effects assessment.

Any updated findings and recommendations will be included with the SEA Post Adoption Statement.

5.2.11 Energy Infrastructure in the Corridor

5.2.11.1 Existing Power Line and the Beauly Denny Line

The Beauly Denny Line (BDL) is an energy infrastructure project which will replace the existing 132kV power line with an upgraded 400kV line. The BDL runs near the A9 from the currently dualled section in Glen Garry, through the Drumochter Pass (approx. 2.25km through Section C) and on past Dalwhinnie (approx. 200m through Section D). The current 132kV line (to be dismantled) continues past Crubenmore, turning west before Newtonmore.

The table below considers the distances between the A9 and proposed BDL tower locations identified within the 200m corridor (none identified within the 200m corridor in Section D).

Table 5.4 Baseline GIS – Beauly Denny Power Line (BDL) Towers

A9 Section	BDL Feature	NEAR_DIST	Comment
Section C	Towers	46	GIS analysis indicates 12 proposed BDL tower locations to the east of the A9 within the 200m wide corridor at Section C. 1 is within 50m of the A9 5 are in the 50-70m range 6 are over 70m from the A9

Route alignment studies should consider options to maintain the maximum clearance between the dualled route and BDL towers.

Given the confines of the Drumochter Pass, wherever dualling on the opposite side of the existing carriageway is not possible, early consultation with SSE/ SHETL will be required to ensure sufficient space for safe access between the route alignment and tower locations.

SEA Procedural Note:

As the Drumochter Hills have multiple biodiversity designations (SAC/ SPA/ SSSI), the A9 dualling HRA Screening exercise has identified the potential for cumulative and in-combination effects with the BDL project in this area.

A strategic programme level Appropriate Assessment will be developed in consultation with SNH during the SEA public consultation period.

Any updated findings and recommendations will be included with the SEA Post Adoption Statement.

5.2.11.2 Wind Farms

The table below details wind farm site applications identified within 200m of the A9.

Table 5.5 Baseline GIS – Wind Farm Developments

A9 Section	Wind Farm Name	STATUS	NEAR_DIST	Comment
Section E	Allt Duine, near Kingussie	Application	0.0	The application indicates two separate accesses to/ from the A9 at Kincraig and Dalraddy
Section F	Moy	Approved	~150	Access to this site is via the B1954, which connects to the A9 at a junction at Dalmagarry, south of Moy, and further north near Craggie, south of Daviot
Section F	Daviot	Application	41	Latest information is that this application has been rejected.

If the proposed Allt Duine wind farm near Kingussie is approved through planning, the developers will need to liaise with Transport Scotland on access options.

In terms of wider issues related to wind farms, the transportation of large wind turbine machinery along the A9 could be an issue, should overhead structures be introduced that do not provide sufficient clearance. This adds weight to earlier recommendations on the avoidance of overhead signs, gantries and other structures, e.g. overbridges.

SEA considers that A9 dualling would be expected to present relatively low risk of cumulative impacts with wind farm developments, given different environmental sensitivities. Wind farm access roads may have to link to the A9, but given plans for dualling, accesses should not be planned with direct connections to the dualled A9.

Landscape issues are also on a different scale; however, some temporary cumulative visual impacts could become evident where A9 construction occurs in an adjustment period to a new wind farm. A9 construction visual impacts would be expected to soften over time; whereas wind turbines would remain a prominent feature in the skyline.

Later A9 dualling design and environmental assessment stages should consider the potential for cumulative effects with wind farm development applications at the local level.

5.2.12 Strategic Considerations – Material Assets

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Material Assets (Resource Efficiency).

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.6 SEA Strategic Considerations – Material Assets (Resource Efficiency)

	A9 dualling should…
1.	Ensure final scheme designs minimise land take, as far as is practicably possible
2.	Ensure schemes maximise the use of existing route infrastructure with suitable residual performance life
3.	Where appropriate, minimise waste generation through re-use of excavated materials across A9 dualling schemes (subject to agreement with SEPA)
4.	Where practicable, use long-life performance materials to improve durability and reduce whole life cost and carbon
5.	Where practicable, minimise the use of raw materials, through the use of appropriate recycled materials that meet safety and durability performance requirements
6.	Assess the effect of recycled material specifications to determine the associated carbon impact and maintain flexibility to select the option that provides the optimal balance between embodied and transportation carbon effects
7.	Use locally sourced materials and suppliers, to reduce material transport emissions and to support local businesses

5.3 Population & Human Health

Moving on from the physical infrastructure/ material asset aspects, A9 dualling represents a range of potential benefits for the local/ regional population, in terms of improving road safety, journey times, operational reliability of the route and connectivity between local and regional population centres and the central belt.

Dualling also presents a range of challenges in terms of local or private access to the route, the National Park and other recreational facilities.

5.3.1 Road Safety and Accident Severity

One of the key safety drivers for dualling is the reduction in accident severity and fatalities.

Given that the A9 between Perth and Inverness is around 27% dualled (48km) and 73% single carriageway (129km), Table 4.6 shows that the split in the total number of accidents (524) is in roughly equal proportions to the respective route lengths (~75% on single carriageways).

Table 5.7 Baseline GIS – Summary Analysis of A9 Accident Data (2001 – 2010)

# of Accidents (2001–2010)	Accident Severity			Total
	Fatal	Serious	Slight	
	53	115	356	524
Dual Carriageway Sections	8	18	100	126
	15%	16%	28%	24%
Single Carriageway Sections	44	97	251	392
	83%	84%	70%	75%
Slip Roads	1	0	5	6
	2%	0.0%	1%	1%

The severity of accidents is significantly reduced on dual carriageways, with lower percentages of fatal and serious accidents, as compared with the single carriageway statistics. This analysis indicates that although full dualling may not reduce the overall number of accidents, it is highly likely to reduce the severity of accidents, including the number of fatalities.

Dualling will remove at-grade junctions and gaps in the central reservation, preventing right turn manoeuvres across carriageways. Dualling will also remove single/ dual carriageway transitions leading to a consistent carriageway standard for split level sections.

SEA considers that each of these measures, considered cumulatively along the route, will be highly beneficial with respect to reductions in accident severity.

Key Finding:

SEA considers that, in terms of Population and Human Health (road safety and accident severity), A9 dualling will present **major positive effects with significant long term benefits,** across the route length.

5.3.2 Emissions to Air

For the majority of its length between Perth and Inverness, the A9 is considered a rural trunk road and the surrounding air quality is very good. With the exception of trains on the Highland Mainline, traffic on the A9 could reasonably be considered the principle source of emissions to air, as well as noise and vibration, along the route corridor.

Dualling activity is likely to temporarily increase each of these pressures during construction phases, with the potential for minor increases over the medium to long term, depending on long term trends in traffic movement and engine types.

All road construction projects will present localised risks in terms of dust and particulate emissions; however, A9 dualling schemes will be delivered in phases and are unlikely to significantly, or cumulatively, affect air quality in the corridor area.

The only Air Quality Management Area (AQMA) near the A9 route is designated for Perth town centre, around 3km from the southernmost boundary of the A9 study area. The A9 dualling Luncarty-Birnam scheme developed a DMRB Stage 2 Environmental Assessment (EA) report which determined that A9 dualling would have no significant effect on the AQMA.

Transport Scotland's current traffic model estimates indicate that 'normal' traffic growth on the A9 to 2022, without dualling, is in the region of 10-15%, depending on the section. This percentage growth must be considered in the context of the relatively low traffic volumes along the route, which range from 6200 AADT on the Dalwhinnie-Kingussie section, to a high of 20,400 AADT at Perth-Luncarty (AADT – Annual Average Daily Traffic).

A fully dualled A9 will deliver benefits in terms of journey time reduction, operational reliability and flexibility (in terms of maintaining flows in the event of accidents that would currently close the road). Improvements in traffic flows will have secondary benefits in terms of reducing the roadside carbon, NOx and particulate emissions associated with stop/start traffic and congestion.

A number of properties in proximity to the current A9 could be identified as potentially sensitive receptors to noise and emissions. Each A9 dualling project will require a design stage environmental assessment (EA) to inform the selection of the preferred route alignment within the corridor. This will include air quality and noise assessments, in line with DMRB guidance, as well as assessment of predicted traffic growth emissions effects on sensitive human and ecological receptors, at the local level.

Key Findings:

SEA considers that, in terms of Population and Human Health (emissions to air), A9 dualling could provide minor benefits to air quality, in terms of improved traffic flow and reduced emissions over the long term; however, it is more likely that dualling will present **no significant effects at the route wide scale**.

There is potential for **localised minor adverse effects** during construction stages, where works are near sensitive receptors (human and/ or ecological receptors).

SEA considers these as **temporary effects, important at the local level**, requiring detailed consideration and mitigation through local EA and construction environmental management planning best practice; however, they are not considered significant issues at the strategic programme level.

5.3.3 Recreation, Access and Public Transport

The Material Assets section discussed some of the developing issues around rationalisation of vehicular access to, and at grade crossings on, the A9, in terms of junctions, lay-bys, structures and crossings. It noted that work was ongoing to develop emerging Strategies on these issues, including a Non Motorised Users (NMU) Strategy.

This part of the Population and Human Health topic considers some of the access issues that have been recognised through the SEA, using the National Park as an example for discussion.

Recent Visit Scotland tourism surveys[2] found that (headlines):

- Tourism in Scotland was worth over £11bn in 2011-12, equivalent to 10% of Scotland's GDP.
- The top reason for choosing to visit Scotland was the scenery and landscapes (55%), and a desire to learn about the country's history and culture was further down the list (28%).
- Over half of all visitors, who live outside of Scotland, travelled by car on the longest part of their journey to the country (53%).
- The Cairngorms National Park attracts around 1.4 million visitors per year (2011 Visit Scotland Survey, based on 2007 Cairngorms survey), 21% are overseas visitors, 47% are Scottish visitors, and 32% were visitors from other parts of the UK.
- Top reason to visit the Cairngorms National Park was scenery (45%).
- 73% of UK visitors, and 56% of all visitors, drive to the Park.
- 45% of all visitors included the Cairngorms National Park as part of a longer 'touring Scotland' trip.
- In terms of walking within the Park, 42% of visitors were short distance walkers, 30% came for long distance walking/ hiking.

The statistics noted above provide some context to the importance of the A9 as a key facilitator route for tourism, particularly for visitors to the Cairngorms National Park (although it is recognised that not all visitors who drive will use the A9).

The Cairngorms National Park Authority (CNPA) highlighted the following issues as part of SEA:

- Access to the Park should be no worse than existing as a result of A9 dualling;
- Maximise opportunities to stop in the Park;
- Ensure there is a realistic baseline on access, and an ongoing commitment to maintenance of access; and
- Maintain access throughout the construction process.

[2] Source: Visit Scotland website, accessed 12 May2013:
http://www.visitscotland.org/research_and_statistics/visitor_research/all_markets/scotland_visitor_survey.aspx

There are similar issues to be considered for other interest features and attractions along the A9, including historic environment, ecological and geological sites, and it is recognised that many lay bys are used as informal parking bays for recreational walkers and mountain bikers. It is also recognised that A9 dualling provides an opportunity to upgrade lay bys and crossing points to ensure compliance with recent Disability Discrimination Act requirements.

Any exclusion of access for the purposes of construction must be carried out in accordance with Land Reform (Scotland) Act 2003; and any signage associated with exclusions or diversions must be in compliance with the Scottish Outdoor Access Code, which provides guidance on the right of responsible access and responsibilities in managing land for access. Where permanent diversions of access routes are required, they should be designed to provide the same, or improved, standard of pathway.

SEA considers that, at the strategic level, overall levels of access to the National Park, and other visitor/ recreational attractions along the route, will be no worse than existing. The rationalisation of junctions, and direct vehicular accesses, will include tie-ins with connecting A, B and C class roads, and the emerging Junction Strategy will include a decision making hierarchy to determine if any important access points should be maintained at the local level.

With respect to, '*maximise opportunities to stop in the Park*', SEA considers that the emerging Lay By and NMU strategies, supported by landscape assessment work to identify possible opportunities around key views, will increase and improve the number of safe stopping points within the Park boundaries, and along the A9 in general.

The emerging NMU strategy is being developed on the basis of the following principles:

- There will be no at-grade crossings of the dualled A9;
- NMU routes crossing the existing A9 in close proximity will be combined where possible;
- Where possible, NMU crossing points will make use of other crossing facilities such as junction overbridges and underpasses; and
- Dedicated NMU crossing points will be provided where site specific requirements can be demonstrated.

As mentioned previously, the emerging NMU Strategy includes the collation of a baseline on the use of recreational routes (to include core paths, cycle routes, equestrian routes and other relevant information), as well as analysis on current NMU crossing points across the A9. This work aims to meet the advice on, '*ensure there is a realistic baseline on access*', and the A9 PES work will involve engagement with local Community Councils and access groups.

> ***SEA recommends*** *that where NMU routes require combination and/ or diversions to safer crossing points, any permanent diversions should be designed to provide the same, or improved, standard of pathway.*

There is a recognised need to ensure that the emerging Lay By and NMU Strategies take account of public transport requirements, particularly bus operations on the route. There are different levels of provision to be considered, including inter-city, local and school bus services.

Each level of bus provision has different stakeholders, including the various bus operators and the relevant local authorities. On a fully dualled route, the key safety related considerations are

that bus stops need to be separated from the mainline and will require footpath links and pedestrian subway crossings.

There may be opportunities to combine lay by provisions with public bus stop requirements in some locations; however, these issues and the potential locations need to be considered at the more detailed design stage, in the context of safety standards and local needs.

Key Findings:

SEA considers that, in terms of Population and Human Health (recreation, access and public transport), A9 dualling will present **no significant adverse effects**.

Some link roads and paths will be rerouted to new junction locations and/ or safe crossing points with the potential for **minor localised adverse effects** in terms of longer connecting routes; principally as more of an inconvenience, rather than a loss of access or connectivity.

Some users may consider a longer path to a safer crossing point a **minor benefit** in health terms; however, NMU rationalisation should work to minimise the distance between crossings.

Emerging Lay By, NMU and Junction strategies, coupled with considerations on public buses and DDA compliance, are assessed as likely to provide **minor beneficial effects at the local level** and, cumulatively, as **moderate beneficial effects at the route wide scale**.

5.3.4 Strategic Considerations – Population and Human Health (Access)

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Population and Human Health (Access).

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.8 SEA Strategic Considerations – Population & Human Health (Access)

A9 dualling should…	
1.	Continue to facilitate opportunities to access visitor attractions and recreational opportunities throughout the route
2.	Retain, and where possible enhance, overall connectivity between non-motorised user routes along and across the A9 corridor
3.	Incorporate effective rationalisation between non-motorised user routes, safe crossing points and provisions for access to public transport
4.	Ensure any rationalisation of non-motorised user routes and safe crossing points is carefully considered to minimise the distance between crossings where possible
5.	Design any permanent diversions in NMU routes to provide the same, or improved, standard of pathway
6.	Employ a preference for underpass crossings, where feasible, to minimise landscape and visual impacts
7.	Ensure compliance with DDA guidance in the design of crossings, lay-bys and links to path networks
8.	Consider the safety and quality of experience for non-motorised users of local roads when vehicle access to the A9 is being rationalised (e.g. the potential for traffic increases on the cycle route network)
9.	Establish community liaison group(s), throughout the construction period, in order to maintain good community relations and ensure that local populations are aware of progress as regards construction
10.	Schedule and control the timing of construction activities to minimise noise impacts on sensitive receptors
11.	Adopt construction and traffic management methods which, as far as possible, maintain access for road users, cyclists, pedestrians and equestrians, and access to the Cairngorms National Park during construction periods

5.4 Landscape

In terms of local landscape variety and a changing visual narrative, the A9 could be described as a world class tourist route where the road sits within, and is a recognised feature of, the changing landscapes along the route.

A9 dualling will inevitably have an effect on the landscape. For example, in areas where a second carriageway is introduced at a higher elevation than the existing carriageway, the change will potentially be more visible than in areas where the road is widened at the same elevation. In areas where the road is screened from view, the effects of change will generally be less pronounced; however, in upland areas with little screening cover, change may be more visible.

This SEA does not provide a Landscape and Visual Impact Assessment, as these more detailed studies will be undertaken at later route alignment and detailed design stages. A route-wide Landscape Review is underway to identify the range of landscape character areas along the corridor, consider potential opportunities in terms of key views from the road and to inform the development of strategic landscape principles and landscape and visual design guidance for the A9.

The remainder of this section discusses some of the preliminary outputs of the Landscape Review. The Landscape Review will be ongoing through the ER consultation period, and the SEA will capture and collate relevant findings and recommendations prior to drafting the SEA Post Adoption Statement.

5.4.1 Theoretical Zone of Visual Influence (ZVI)

In order to determine an appropriate study boundary for the consideration of landscape and visual issues, a 3D GIS model was used to develop a theoretical zone of visual influence (ZVI).

The ZVI is based on radial viewshed analysis in all directions from the A9 centre line, but does not include screening features, such as trees, walls, small scale cuttings, etc; it is a theoretical zone based on landform topography.

The ZVI helps demonstrate the potential scale of views from the road. It illustrates both areas that can see and can be seen from the road, as well as the extent of the landscape that creates the scenic experience. Theoretically, up to 3% of Scotland can be seen from, or can see parts of, the A9.

The wider basis for the A9 landscape review study area is therefore the land covered by the ZVI; however, in terms of a meaningful visual range for specific designations, e.g. Historic Gardens and Designed Landscapes, the study area was restricted to 10 km around the current route.

In the figure below the green area represents the ZVI, and other related features, including National Scenic Areas, the Cairngorms National Park boundary and Historic Gardens and Designed Landscapes are shown on top of the ZVI to highlight where they overlap.

The ZVI is useful in demonstrating the potential visibility of the road from the surrounding countryside; particularly as the visibility of online dualled sections is likely to be similar to the visibility of the existing route.

There may be some areas where the road geometry requires alterations to horizontal or vertical alignments; however, these areas will not be determined until later route alignment and detailed design studies.

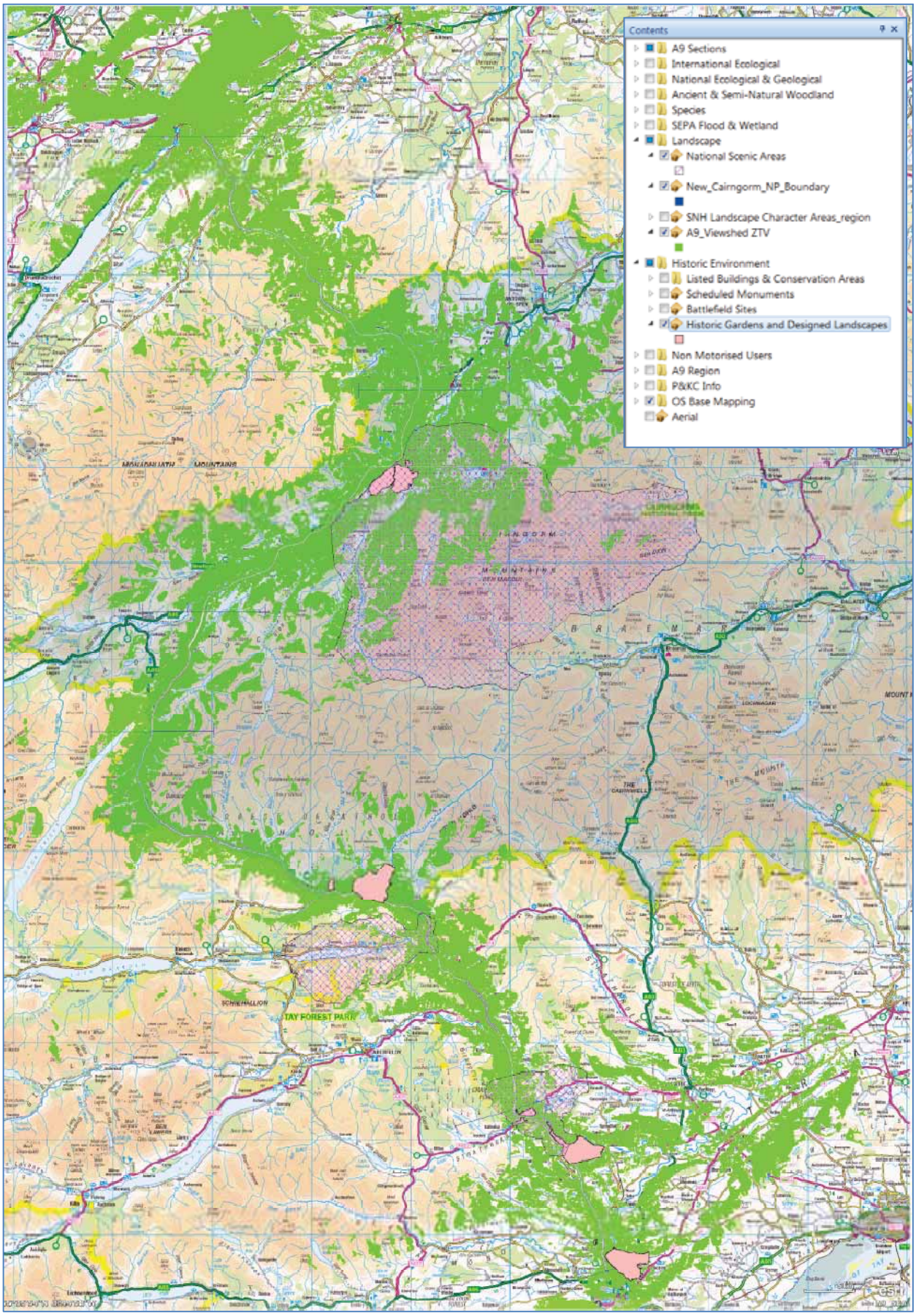

Figure 5-2 GIS Baseline Image – A9 Theoretical Zone of Visual Influence (ZVI)

5.4.2 Cairngorms National Park (CNP)

The A9 runs within the Cairngorms National Park, close to the south and western boundaries, and the National Parks (Scotland) Act 2000 outlines the following key aims:

1. To conserve and enhance the natural and cultural heritage of the area;
2. To promote sustainable use of the natural resources of the area;
3. To promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the area by the public; and
4. To promote sustainable economic and social development of the area's communities.

A9 dualling is expected to present a range of effects on landscape, visual, nature conservation and access interests. These will vary in scale and duration, with the construction stage expected to present the most visually intrusive effects; however, these are likely to soften over time. It is accepted that a widened route will represent a permanent change in the landscape; however, online widening is expected to present a lower level of change than an alternative or offline route, which would introduce a completely new feature.

The table below highlights that three A9 sections lie wholly within the Park and, in terms of total surface area, more than 56% of the 200m wide online corridor lies within the National Park boundary. The GIS analysis also shows that the 200m wide corridor along and within the Park boundary represents less than half of one percent of the total Cairngorms National Park area.

Table 5.9 Baseline GIS – Cairngorms National Park (CNP)

A9 Section	CNP Area (m2)	Corridor Area (m2) in CNP	% of CNP	% of A9 Section Area	% of Total CNP	% of Total Corridor
Section B	4,528,098,740	1,787,596	0.04%	26%	0.4%	56.5%
Section C		5,750,912	0.13%	99%		
Section D		2,819,699	0.06%	100%		
Section E		6,879,086	0.15%	100%		
Section F		2,348,603	0.05%	30%		

By way of providing a comparison between the online corridor and the near offline corridor options, the table below considers the difference in total surface area of each near offline option within the Park boundary.

Table 5.10 Baseline GIS – Near Offline Options Comparison – CNP

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
CNP	n/a	Same	Less (0.69 sq km) within CNP boundary 38% less in CNP than online Option B1	Less (0.29 sq km) within CNP boundary 16% less in CNP than online Option B1

Quantitative comparisons of the footprint within the CNP would really only be useful in the context of other criteria. It is more meaningful to consider the Special Landscape Qualities of the Park, and the potential effects on those qualities.

The special qualities, noted in the table below, help define the CNP, and it is important that they are respected by, and used to inform, A9 dualling designs and route alignment studies at the local level. The National Parks Act also contains a requirement for public bodies to look for

enhancement when carrying out activities in the Park, and the Cairngorms National Park Authority (CNPA) advise that enhancement should be considered over the long term, not necessarily as an immediate benefit.

Table 5.11 Summary of CNP Special Landscape Qualities[3]

1.0 General Qualities	2.0 The Mountains and Plateaux	3.0 Moorlands	4.0 Glens and Straths	5.0 Trees, Woods and Forests
• Magnificent mountains towering over moorland, forest and strath • Vastness of space, scale and height • Strong juxtaposition of contrasting landscapes • A landscape of layers, from inhabited strath to remote, uninhabited upland • 'The harmony of complicated curves' • Landscapes both cultural and natural	• The unifying presence of the central mountains • An imposing massif of strong dramatic character • The unique plateaux of vast scale, distinctive landforms and exposed, boulder strewn high ground • The surrounding hills • The drama of deep corries • Exceptional glacial landforms • Snowscapes	• Extensive moorland, linking the farmland, woodland and the high tops • A patchwork of muirburn	• Steep glens and high passes • Broad, farmed straths • Renowned rivers • Beautiful lochs	• Dark and venerable pine forest • Light and airy birch woods • Parkland and policy woodlands • Long association with forestry

6.0 Wildlife and Nature	7.0 Visual and Sensory Qualities	8.0 Culture and History	9.0 Recreation
• Dominance of natural landforms • Extensive tracts of natural vegetation • Association with iconic animals • Wild land • Wildness	• Layers of receding ridge lines • Grand panoramas and framed views • A landscape of many colours • Dark skies • Attractive and contrasting textures • The dominance of natural sounds	• Distinctive planned towns • Vernacular stone buildings • Dramatic, historical routes • The wistfulness of abandoned settlements • Focal cultural landmarks of castles, distilleries and bridges • The Royal connection	• A landscape of opportunities • Spirituality

In the broader long term context, SEA considers that A9 dualling will help provide a range of enhancements for the local population, communities and businesses, in terms of road safety, operational flexibility and journey reliability. There will be long-term improvements to road discharge water quality, and improvements in route permeability for mobile species. Recreational access and NMU crossing points will be made safer, all of which will be likely to have incremental enhancement benefits for the National Park.

The key issue is sympathetic design of the dualled route that works with immediate landscape features, reflects the changing landscape character within the Park, and provides additional opportunities to stop en-route and take advantage of key views.

[3] Source: Scottish Natural Heritage and Cairngorms National Park Authority (2010). The special landscape qualities of the Cairngorms National Park. Scottish Natural Heritage Commissioned Report, No.375 (iBids and Project no 648). Available online at http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1520

5.4.3 National Scenic Areas (NSA)

There are three National Scenic Areas (NSA) within the A9 ZVI, and Table 5.12 outlines a simple GIS analysis identifying the total surface area of the 200m corridor crossing the NSA features.

Table 5.12 Baseline GIS – National Scenic Areas (NSA)

A9 Section	NSA_NAME	NSA Area (m2)	Corridor Area (m2) in NSA	% of NSA	% of A9 Section	% of Total Corridor
Section A	River Tay (Dunkeld)	57,079,213	1,454,653	2.6%	34%	9%
Section B	River Tay (Dunkeld)	57,079,213	721,019	1.3%	10%	
Section B	Loch Tummel	90,131,160	908,339	1%	13%	
Section E	The Cairngorm Mountains	655,388,146	41,287	0.006%	0.6%	

When Sections A and B are considered together, approximately 4% of the River Tay (Dunkeld) NSA is crossed by the 200m wide corridor, and around 1% of the Loch Tummel NSA is crossed by the 200m corridor in Section B.

Section E is indicated with 0.006% of the Cairngorm Mountains NSA crossed by the 200m corridor. This small fraction indicates that the outer limit of the 200m corridor crosses the outer limit of the NSA boundary.

Route-wide, just over 9% of the total online corridor, from Perth to Inverness, crosses an NSA designation.

By way of providing a comparison between the online corridor and the near offline corridor options in Sections A and B, the table below considers the difference in total surface area of each near offline option through the River Tay (Dunkeld) and Loch Tummel NSA designations.

Table 5.13 Baseline GIS – Near Offline Options Comparison – NSA

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
NSA	Slightly less (0.03 sq km) within NSA boundaries	Slightly less (0.03 sq km) within NSA boundaries	Slightly less (0.12 sq km) within NSA boundaries	Same

It must be noted that quantitative analysis on total surface area through the NSA designations should be used to inform the selection of a preferred corridor only in the context of other constraints. Multiple criteria should be used, and the area through the NSA would not necessarily be a primary consideration, as each option is likely to present similar issues given that they all run through the NSAs to some degree.

The more important factors to be considered are the potential effects on the Special Landscape Qualities of the National Scenic Areas. In their Commissioned Report No. 374, SNH define 'special qualities' as:

'…the characteristics that, individually or combined, give rise to an area's outstanding scenery'.

The table below provides a summary of the special qualities of two of the NSAs noted. The Cairngorms Mountains NSA is included in the summary of the special qualities of the Cairngorms National Park discussed previously.

Table 5.14 Summary of NSA Special Landscape Qualities[4]

Loch Tummel NSA	
Summary Points	**Particular relevance to the A9**
• A breathtakingly beautiful landscape, both lowland and highland • Loch Tummel, the heart of the NSA • Rich and varied woodlands • Peacefulness and tranquillity • The celebrated Queen's view • Spectacular and famous mountain gorge – the Pass of Killiecrankie • The picturesque Linn of Tummel	The deep, wooded gorge of the River Garry in the Pass of Killiecrankie, famous for its historical associations, is spectacular. Above the gorge, the view from Craigower Hill provides a stunning panorama westwards over the whole NSA; and the main A9 road, as it exits the narrow pass, presents a grand vista northwards into the Vale of Atholl, a 'Gateway to the Highlands'. The Pass of Killiecrankie is strategically located at a pinch-point on one of the main routes between the Highlands and the Lowlands. Within the pass, the River Garry flows though a spectacular, steeply-sided wooded gorge with deep pools and the narrow Soldier's Leap. It is renowned in Scotland and beyond both for its history and its spectacular scenery. It was the scene of the Battle of Killiecrankie (1689), the first Jacobite uprising when Bonnie Dundee (Claverhouse) defeated William of Orange's government army. *Despite the presence of main roads, railway, and hydro-electric installations, it is a landscape with sufficient strength of character for all the man-made intrusions to be dominated by the natural beauties of water, wood and mountain.*
River Tay (Dunkeld) NSA	
Summary Points	**Particular relevance to the A9**
• The beauty of cultural landscapes accompanying natural grandeur • The 'Gateway to the Highlands' • Characterful rivers, waterfalls and kettle-hole lochs • Exceptionally rich, varied and beautiful woodlands • The picturesque cathedral town of Dunkeld • Drama of The Falls of Braan and The Hermitage • Dunkeld House policies • Significant specimen trees • The iconic view from King's Seat	At the NSA's centre is the compact and picturesque cathedral town of Dunkeld, nestling in the hills on the Tay's north haughlands, connected by Telford's old stone bridge to the Victorian railway resort of Birnam with its distinctive station. It is of special cultural and historic significance being strategically placed on a major north-south route to the Highlands. The northern part of the area consists of the broad strath of the Tay, strongly contained between heavily afforested valley sides where larch, pine and fir predominate. Below Inver where the Braan tumbles through the picturesque gorge of the Hermitage into the Tay, the haughlands are occupied by the little cathedral city of Dunkeld on the north, and the Victorian railway resort of Birnam on the south, then by pasture or woodland as the river winds eastwards out of the Highlands. Dunkeld has long been lauded as the 'Gateway to the Highlands', where lowland scenery changes to highland and both can be appreciated, often in the same view. This 'gateway feel' is experienced when travelling north on the A9 trunk road, descending the hill to Dunkeld, then rounding the corner to behold vistas opening-up of Strath Tay and the Highland hills behind.

The special qualities of the NSAs should be recognised as key landscape and visual receptors for local dualling, and there is potential for adverse effects where dualling designs are not sympathetic to the NSA qualities and features. However, where designs take cognisance of and respect the special qualities, there are also opportunities to manage the views from the road to improve the experience for road travellers to better appreciate these qualities.

With respect to the River Tay (Dunkeld) NSA, the Landscape Review found that as the A9 bisects the NSA, the road forms one of the elements of the cultural landscape. The Review also highlights that many of the other special qualities of the NSA are screened from the road.

[4] Source: Scottish Natural Heritage (2010). The special qualities of the National Scenic Areas. Scottish Natural Heritage Commissioned Report No.374 (iBids and Project no 648). Available online at http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1522

SEA notes that although Option A6 has slightly less overall surface area through the NSA, it would require an entirely new swathe cut through established woodland and would therefore present greater visual and habitat connectivity/ fragmentation impacts than the online corridor.

Option B2 is also likely to present higher risks of change within the NSA, than the online corridor, as it creates a new road on the opposite site of the River Tay and along the edge of the Tay Forest Park.

The Landscape Review found that A9 online dualling is likely to have very limited potential to impact on the special qualities of the Loch Tummel NSA, as the road runs along the very eastern edge of the NSA and the A9 is already dualled at the Pass of Killiecrankie.

Near offline Option B4 presents an alternative route through the Pass of Killiecrankie, and SEA considers that Option B4 therefore presents higher risks of impacts to the NSA Special Qualities than the online corridor option B1.

Near offline option B5 is not considered sufficiently different from the online option to affect NSA special qualities.

Key Findings:

SEA considers that, with respect to Landscape (National Scenic Areas), *online* dualling will minimise the potential risk of adverse effects on the River Tay (Dunkeld) and Loch Tummel NSAs, presenting relatively **minor adverse effects** associated with widening the existing road.

Options A6, B2 and B4 will present higher risk of **moderate to major adverse effects**, due to swathe cuts through woodland, new routes between woodland and river, and more significant change through the Pass of Killiecrankie.

5.4.4 Wildness and Dark Skies

CNPA Supplementary Planning Guidance on Wildness describes the concepts of Wildness and Wild Land as:

> *Wildness – The experience felt when in a wild landscape… …derived from the combination of four specific attributes – naturalness, ruggedness, remoteness and the lack of modern human artefacts.*
>
> *Wild land – An area where an individual finds the experience of wildness is particularly strong.*

CNPA describe the current A9 transport corridor as band C (low value) with respect to wildness, where the priority is to reduce or limit the impacts upon band A and B (higher value) areas.

SNH recently produced a national Search Areas for Wildness mapping series with four individual layers:

- Perceived Naturalness
- Rugged or Challenging Terrain
- Remoteness from Roads
- Lack of Built Human Artefacts

The four layers are then combined to produce a national composite wildness map, and the Landscape Review has superimposed the A9 ZVI map onto the composite map to identify the interactions between the two.

Given that the current A9 transport corridor is considered as low value with respect to wildness, the Landscape Review found that online dualling around the existing road is likely to present the lowest risk of change to perceived wildness in areas within the ZVI.

SEA also considers that the near offline options, proposed in Sections A and B are not sufficiently different in location to present additional effects on perceived wildness.

In terms of noise and tranquillity, SEA recognises that traffic on the A9 can be heard at some distance, and does play a part in the experience of wildness (particularly with respect to the remoteness from roads aspect); however, any increase in traffic via online dualling and/ or the near offline options is not expected to be sufficient enough to present a noticeable change over existing conditions. Construction noise may be noticeable in some areas, depending on local conditions; however, SEA considers this issue as a relatively short term, temporary and reversible effect.

As discussed previously, much of the A9 is currently unlit and, in areas where dark skies are considered a valued feature of the landscape, additional lighting might impact upon areas valued as wild land (i.e. the introduction of lighting could impact upon perceived wildness).

There is the potential that lighting may be introduced into some areas where grade separated junction standards require lighting for safety purposes.

An overarching principle, on the avoidance of lighting on the A9 mainline, is expected to restrict lighting to areas where safety standards dictate; therefore, SEA considers that there may be some localised minor adverse impacts on dark skies.

Key Findings:

SEA considers that, with respect to Landscape (Wildness and Dark Skies), the route-wide cumulative effect of online dualling will be minimal; however, due to the potential for permanent lighting change, which may be associated with junction safety requirements in some areas, the cumulative effect is assessed as **minor adverse**.

5.4.5 Landscape Character Areas (LCA)

The A9 passes through some of most beautiful scenery in Scotland and, when considered against the SNH Landscape Character (LCA) dataset, the A9 between Perth and Inverness runs through 11 distinct character areas. Outwith the SNH Landscape Character Assessment, the Cairngorms National Park Authority (CNPA) recently completed a more detailed assessment within the Park boundaries, identifying 15 landscape character areas along the route of the A9.

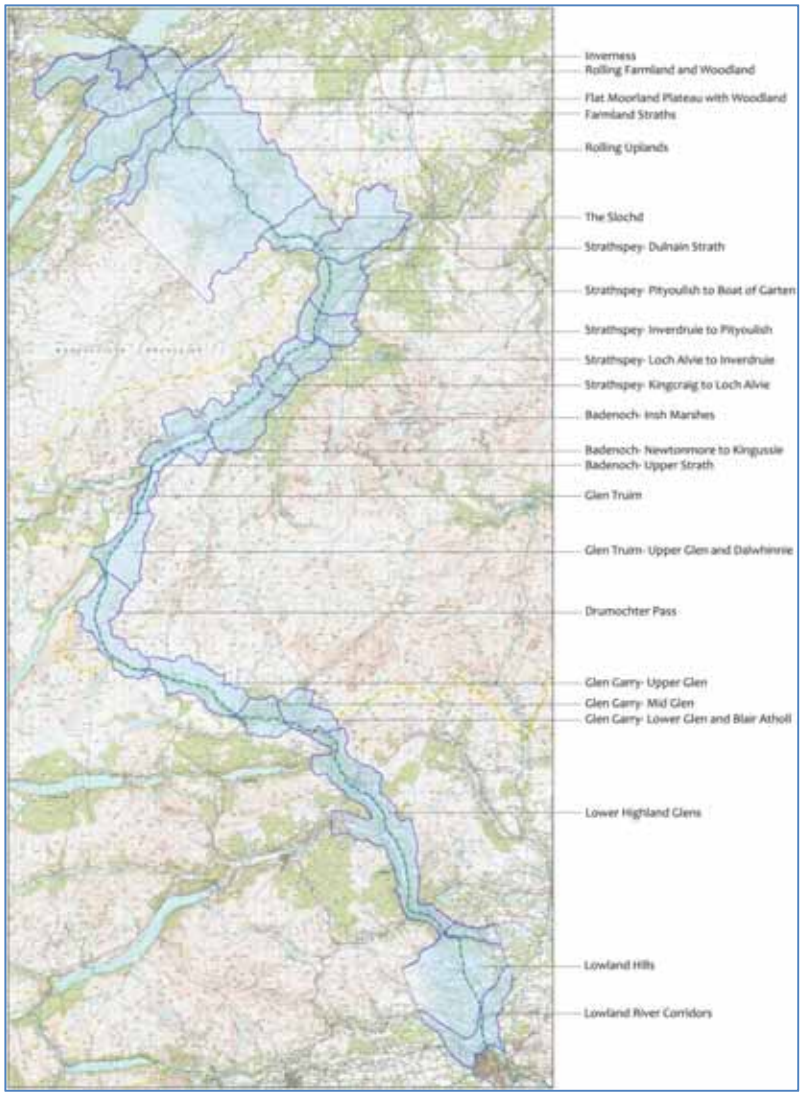

Figure 5-3 Landscape character areas around the A9

The Landscape Review has combined the CNPA and SNH assessments and determined a total of 23 distinct character areas between Perth and Inverness, as outlined in Figure 5-3.

A9 dualling is likely to have some effects on the local landscape and the Landscape Review aims to identify those landscapes that are particularly sensitive and that could be significantly affected by dualling works, as well as the design issues which could help minimise effects.

A Landscape Review Report will consider each character area, noting descriptive characteristics and indicative sensitivity to dualling. The Landscape Review Report will also be subject to consultation with SNH and CNPA.

Table 5.15 provides an overview of the indicative sensitivities and key design implications for each LCA.

The indicative sensitivity is based on a simple assessment of the degree of openness of the landscape; where the more wooded and enclosed the landscape, the less visually sensitive.

Table 5.15 Landscape Review – Indicative LCA sensitivity and design implications

Landscape Character Areas	Indicative Sensitivity	Key Design Implications
Inverness		
Inverness	Low	Retain distinctive design in relation to the town's key characteristics Effort to be made to reinforce the town's distinctive character, by ensuring that all proposals have a strong emphasis on distinctive design and careful siting, in relation to the town's key characteristics
Rolling Farmland and Woodland *Bogbain to Inshes*	Low	At the broadest scale, changes which respect the balance between open and enclosed space, will appear most appropriate This will help prevent homogenisation of different areas and retain the diverse mix of landscape patterns and land uses, which is a characteristic of this landscape type
Foothills and Plateau: Flat Moorland Plateau with Woodland *Daviot to Bogbain*	Medium	Any new element in this landscape type will tend to be highly visible, it is particularly important that these are well designed and have a simple relationship with their surroundings
Straths & Glens: Farmland Straths *Meall Mor to Daviot*	Medium	The addition of new elements within this landscape will appear most appropriate where they maintain the characteristic contrast between the strath floor and sides
Uplands: Rolling Uplands *Slochd Mor to Meall Mor*	High	As any new development will be will be highly visible in the landscape, it is important that new elements have a simple clear relationship with their immediate surroundings
Cairngorms		
The Slochd *Slochd Mor to Baddengorm*	High	Retain the contrast between the narrow enclosure in the Pass and the open expanse of the basin and views south
Strathspey: Dulnain Strath *Crannaich to Baddengorm*	Low	Maintain elevated views to Carrbridge and the western side of the strath from the A9
Strathspey: Pityoulish to Boat of Garten *Aviemore to Crannaich*	Low	Retain woodland/ cutting character but look for opportunities to exploit striking views to the Cairngorms massif
Strathspey: Inverdruie to Pityoulish *Edge of Aviemore*	Low	Retain enclosed woodland character of A9 Hide most of the route within cuttings and woodland screen views of Aviemore
Badenoch: Loch Alvie to Inverdruie *Dalraddy to Aviemore*	Low	Minimise impact of the road Keep the A9 mostly in cutting through this character area and screen with woodland
Badenoch: Kincraig to Loch Alvie *Kincraig to Dalraddy*	Medium	Retain the contrast of open, grazed land at Kincraig, with the generally enclosed road enclosed in cuttings and by woodland
Badenoch: Insh Marshes *Ruthven Bridge to Kincraig*	Medium	Retain a sequence of enclosed woodland and open farmland
Badenoch: Newtonmore to Kingussie *Braes of Nuide to Spey Bridge*	Medium	Reflect adjoining complex, intricate terrain
Badenoch: Upper Strath *Bridge of Truim to Braes of Nuide*	Medium	Visually screen the A9 with hummocky terrain and by extensive semi-natural, birch dominated woodland Emphasise the sense of arrival associated with Glen Truim/ Laggan
Glen Truim *Crubenmore to Bridge of Truim*	Medium	Reinforce sense of travelling through a 'pass' Retain an intimate scaled pattern of woodland and open ground
Glen Truim: Upper Glen & Dalwhinnie *Tom a'bhacain to Crubenmore*	High	Retain the exposure of the road and retain the open landscape with sparse vegetation
Drumochter Pass *The Wade Stone to Tom a' Bhacain*	High	Minimise infrastructure associated with the road

Landscape Character Areas	Indicative Sensitivity	Key Design Implications
Glen Garry: Upper Glen *Struan to the Wade Stone*	High	Retain relative openness
Glen Garry: Mid Glen *Woodend to Struan*	High	Ensure evenly graded and simple slopes Retain views across the strath to the north facing slopes
Glen Garry: Lower Glen & Blair Atholl *Killiecrankie to Woodend*	High	Retain/ reinstate partial woodland screening and retain views from the road
Tayside		
Lower Highland Glens *Pass of Birnam to Killiecrankie*	Medium	Minimise the creation of cuttings and embankments, and additional signage, or features such as concrete kerbing Explore opportunities for additional on- and off-site screening to reduce the impact of existing sections of road
Lowland Hills *Northleys to Pass of Birnam*	Medium	Explore off site and on site screening of major roads, avoid using suburban features such as concrete kerbing Reinstate hedgerow, trees, gates and other features on more minor schemes
Lower River Corridors *Inveralmond to Northleys*	Low	Minimise the creation of cuttings and embankments and additional signage or features such as concrete kerbing

Work will continue on the Landscape Review to inform the development of an A9 Design Guide, in consultation with key stakeholders.

5.4.6 Views from the Road

The Landscape Review has worked with CNPA and SNH to identify a range of particularly impressive views along the A9, with the potential to be considered in later route alignment studies as opportunity views, and to inform the emerging Lay By and NMU Strategies.

The majority of lay bys along the A9 are simple roadside bays, and many are already used as informal parking bays for recreation. The proposed standard for dualling is to have Type A lay bys, where the lay by is separated from the mainline with diverge and merge tapers, roughly every 2.5km.

The aim is to incorporate the opportunity view locations into ongoing studies, such that the experience of travellers using the A9 is enhanced with improved opportunities to stop near these key views. The location, size and style of a lay by site will therefore be considered in the context of providing stop facilities close to great views wherever possible.

Similarly, where lay bys are linked to key views by paths or trails, these should also be considered in the context of providing safe linkages to nearby NMU routes. For key views to be incorporated successfully there should be detailed local level consideration of pedestrian subway crossings to connect both sides of the road to the viewpoint, where appropriate.

Key Findings:

SEA considers that, with respect to Landscape (View from the Road), the early incorporation of opportunity views, supported with design guidance on the potential for enhanced lay bys, is a key enhancement measure for A9 dualling. This is likely to present **locally minor benefits**, aggregating to a **cumulatively moderate benefit** at the route wide scale.

Figure 5-4 provides an outline summary of 19 'primary' view areas identified.

Location	Key View
Bogbain	North over the Moray Firth
River Findhorn	West along the river
Sloch	South through the pass at the distant Cairngorm summits
Lay-by 149 west of Carrbridge	Panoramic views south towards the Cairngorms
View of Cairngorms	View ahead for southbound travellers
Loch Alvie	South east over the Spey to the Cairngorm peaks
Dalraddy	View over strath Spey to the Cairngorms
Loch Insh	Insh Marshes and the hills beyond
Ruthven	Spectacular view of Ruthven Barracks
Dalwhinnie	Attractive views of the distillery
Drumochter	Dramatic views north and south through the pass
Loch Garry	South west from Dalnaspidal
Clunes/ Bruar	Glen Errochty and Glen Garry
Blair Atholl	Picture perfect view of the castle and policy woodlands
Killiecrankie	West along Glen Garry
Faskally	River Tummel at crossing
Pitlochry	North over the town to Ben Vrackie
River Tay	North over farmed strath
Dunkeld/Birnam	View along pass

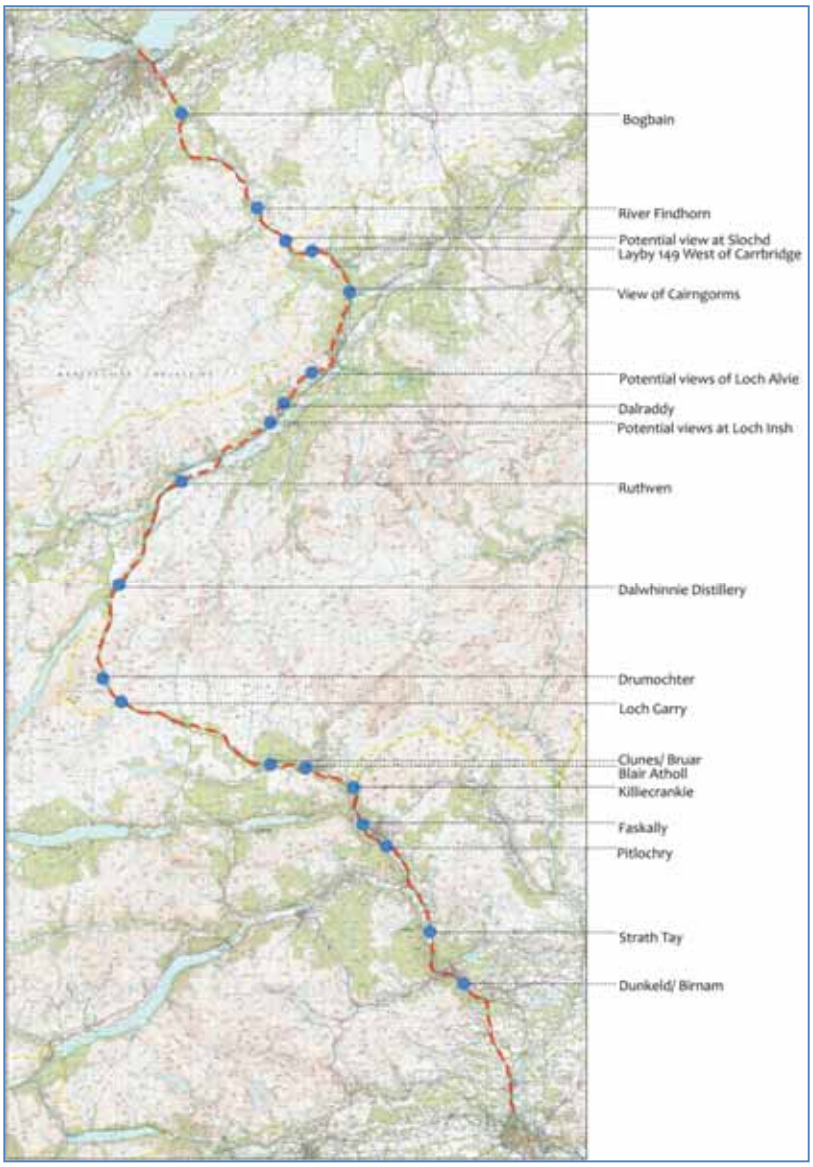

Figure 5-4 Landscape Review – Primary Views from the Road

Key Findings:

More detailed Landscape and Visual Impact Assessments will be required through later detailed design stages for A9 dualling, at the local level; informed by the strategic level work being undertaken via the Landscape Review.

Road works will present highly visible effects during and post construction periods, and guidance on a range of screening and landscaping measures to soften the effects will be determined in consultation with SNH, CNPA and other stakeholders.

A balance will need to be struck between landscape, opportunity views and other factors, including safety and biodiversity, through the detailed design phases.

5.4.7 Strategic Considerations – Landscape

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Landscape.

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.16 SEA Strategic Considerations – Landscape

A9 dualling should…	
1.	Ensure that respect for the distinctive local landscape character and qualities of the A9 corridor shall inform all aspects of the dualling process
2.	Ensure road alignment and design responds to the landscape qualities and key characteristics of each landscape character area through which the route passes
3.	Whilst respecting the distinctive character and qualities of the landscape and places along the route, ensure a consistency of approach to design to reinforce the overall identity of the A9 between Perth and Inverness
4.	Enhance the views from the road to maximise the positive traveller experience (a) Key views shall be agreed to inform the siting of lay bys, around appropriate opportunities (b) View management plans should be developed
5.	Ensure both construction and long term [25 years plus] potential landscape effects inform the landscape design of the road
6.	Design for low maintenance and to accommodate future change
7.	Use natural characteristics in design and encourage the use of sensitive and innovative methods to mitigate adverse environmental and visual effects, including rock cuttings, to deliver appropriately balanced solutions
8.	Protect prominent features and local landmarks and enhance their setting, where possible
9.	Where appropriate, minimise the effect of the road on the experience of the wider landscape, including lighting and noise
10.	Minimise the landscape impacts of verge and boundary treatments, within the context of safety standard requirements
11.	As far as possible, avoid, or reduce effects on, landscape features, retain and make best use of existing vegetation and re-use site won materials wherever possible
12.	Maintain and where possible enhance ecological and landscape connectivity and minimise fragmentation
13.	Protect species and habitats to support biodiversity, natural processes and LBAP targets
14.	Use locally native and characteristic plant species and species mixes
15.	Secure adequate land for integrated landscape solutions
16.	Aim to ensure the enhanced reputation of the A9 as one of the world's great tourist routes, through landscapes of national and international importance. A series of design guide strategies (e.g. laybys and viewpoints, rock cuttings, public access and transport, etc.) should support such route wide enhancement.

5.5 Historic Environment

A9 dualling presents a number of challenges with respect to the surrounding historic environment, such as avoiding adverse impacts on heritage assets and their setting, whilst at the same time improving access to areas for visitors and tourists.

Historic Scotland (HS) advise that historic environment policy in Scotland is currently under review, and that the findings of the review will be implemented during the lifetime of the A9 dualling programme. HS recommend that A9 dualling tracks the progress of the review as it may have implications for project level environmental assessments.

With respect to the SEA, scheduled monuments, listed buildings, an important battlefield site and other historic environment designations have been identified as key constraints for route alignment studies within the corridor options.

5.5.1 Scheduled Monuments

Route wide analysis identified 14 Scheduled Monuments within the 200m online corridor, seven of which are not likely to be further affected, as they are located around sections which are already dualled, noted by the coloured rows below.

Table 5.17 Baseline GIS – Scheduled Monuments (SM)

A9 Section	SM_NAME	NGR	% in 200m Corridor	NEAR _DIST	Comment
Section A	Bertha Roman Fort	NO 097268	21%	3	Already dualled section – no issue
Section B	Kindallachan, cairn	NN 995497	100%	8	Potentially constrained by flood zone on opposite of side carriageway
Section B	Westhaugh of Tulliemet,cross slab	NN 988510	100%	11	In flood zone, consider dualling to opposite side of the carriageway but also Ancient Woodland to consider
Section B	Kindallachan, standing stone	NN 994499	100%	21	Potentially constrained by flood zone on opposite side of the current carriageway
Section B	Clach na h'Iobairt, standing stone 300m E of Pitagowan	NN 876652	100%	35	May be able to dual to the opposite side of the current carriageway to avoid this SM Possible to avoid via route alignment studies
Section B	Tynreich Cottages, stone circle	NN 976534	100%	37	Already dualled section – no issue
Section B	Prince Charlie's Bridge, military bridge, Dalcapon Wood	NN 975542	100%	39	Already dualled section – no issue
Section B	Clachan More, two standing stones, Dowally	NO 000479	100%	45	Possible pinch point as constrained on both sides of the current carriageway Symmetrical widening may be possible
Section B	Moulinearn, military bridge, Mill Lands of Dalcapon	NN 969547	100%	64	Already dualled section – no issue
Section B	Mill-Lands of Dalcapon, enclosure	NN 971544	12%	87	Already dualled section – no issue
Section D	Dalwhinnie, Wade Bridge	NN 638827	49%	75	Bridge crossing the River Spey SAC, in flood zone, at outer edge of 200m corridor Constrained by Drumochter SSSI designation and areas of wetland Possible to avoid via route alignment studies

A9 Section	SM_NAME	NGR	% in 200m Corridor	NEAR _DIST	Comment
Section E	Dunachton Lodge,symbol stone	NH 820046	80%	93	At far edge of 200m corridor, in AW & SNAW area Possible to avoid via route alignment studies
Section F	Bogbain Wood, hut circle and field system 400m SSW of Bogbain Farm	NH 705416	15%	29	Already dualled section – no issue
Section F	Drumbain Cottage, hut circles 725m, 845m and 975m	NH 817269	51%	76	Already dualled section – no issue

There are therefore seven Scheduled Monuments that lie within the 200m online corridor along single carriageway sections. Two of these are at distances greater than 70m from the current carriageway (Section D and E), and the five that lie within 50m of the current carriageway are all found in Section B.

The table below shows that, other than Option B2, there are no significant differences between the online and near offline options.

Table 5.18 Baseline GIS – Near Offline Options Comparison – Scheduled Monuments

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
SM	Same	Three fewer SM when compared with online Option B1 Five SM are the same as Option B1, with one different – Clach Glas, standing stone at approx 32m from B2 centre line	Same	Same

Option B2 runs to the opposite side of the Tay, and would therefore avoid the first three SM noted for Section B above; however, the value of the option needs to be considered in the context of other constraints.

Key Findings:

SEA considers that, with respect to Historic Environment (Scheduled Monuments), only Section B presents risks of direct adverse effects, given the proximity of some SM to the current route.

Any physical loss would be a **major adverse effect**; however, where dualling designs avoid direct impacts, SEA considers that effects on setting will be minimal, again given their current proximity to the existing road.

At the route wide scale, there are likely to be a number of monuments outwith the 200m corridor, that have visibility to/ from the road, there are therefore likely to be some risks of **locally minor adverse effects** on the setting of such monuments; however online dualling is expected to minimise such risks.

5.5.2 Battlefields

Battlefields are a relatively new statutory designation, created by the Historic Environment (Amendment) (Scotland) Act 2011, Section 11; and the existing A9 passes through or close to three designated battlefield sites.

Culloden – the road is 3.5km away from the designated site; the A9 is already dualled in this section, and Culloden also appears to be outwith the ZVI for the existing road. However, the site is extremely important and the potential for impacts on the setting of the site should be considered for any local level improvement works on the A9.

Dunkeld – the road passes within 100m of boundary the designated site, which is on the north bank of the River Tay. Given that the Tay provides a physical barrier, dualling is not expected to impact this area directly and effects on setting are likely to be minimal.

It should be noted that the Culloden and Dunkeld Battlefield sites, although recognised, are not considered any further through the SEA.

Killiecrankie – the A9 passes through the designated battlefield site; beginning with a dual carriageway section at the entrance to the Pass of Killiecrankie, transitioning to single carriageway through the remainder of the site. Concerns were raised by Historic Scotland and the Cairngorms National Park Authority over potential dualling impacts on Killiecrankie Battlefield, and any dualling proposals will need to be designed sensitively, working closely with Historic Scotland, to minimise any impact on the site.

Table 5.19 Baseline GIS – Killiecrankie Battlefield

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	% of A9 Section	% of Total Corridor
Section B	Killiecrankie Battlefield	4,467,422	809,619	18%	12%	2%

This stretch through the battlefield represents around 12% of the online corridor in Section B and the 200m wide corridor covers just over 18% of the total battlefield site area; however, the real area at risk of change would be much lower than 18% when the actual width of the widened road is taken into consideration.

Table 5.20 Baseline GIS – Near Offline Options Comparison – Battlefields (Killiecrankie)

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
Battle	n/a	Same	Less (0.64 sq km) crosses the battlefield boundary Does not completely avoid crossing the battlefield boundaries, but is 80% less than Option B1	Same

SEA considers that online dualling is likely to present permanent effects of medium impact significance to the battlefield, due to some permanent loss of land to road surfacing, and associated permanent visual change over current conditions. Given a nationally designated site and medium impact, SEA considered the overall impact significance as major adverse.

Option B4, via the opposite side of the Pass of Killiecrankie, was developed as an alternative. This option potentially presented less of a direct impact on the battlefield, as it could enable dualling to the opposite side of the gorge, either leaving the existing road in-situ through the site, or enabling later removal works.

Option B4 would still be visible on the opposite side of the gorge, and when considered in the context of other constraints, it presents more issues for Ancient and Semi-Natural Woodland, SSSI and SAC designations (see Figure 5-5 below).

On balance, SEA considers Option B4 to be less favourable than the online corridor option, and recommends B1 as the preferred corridor option at this location (with mitigation).

SEA has not conducted site level surveys of the battlefield; therefore the strategic mitigation recommendation is to work with Historic Scotland and other key stakeholders to inform detailed design and to manage change in a sympathetic manner. Site level options should be developed via route alignment studies and more detailed environmental assessment. With strategic mitigation recommendations in place, SEA considers that residual impacts on the battlefield would be low in magnitude, resulting in a moderate adverse effect.

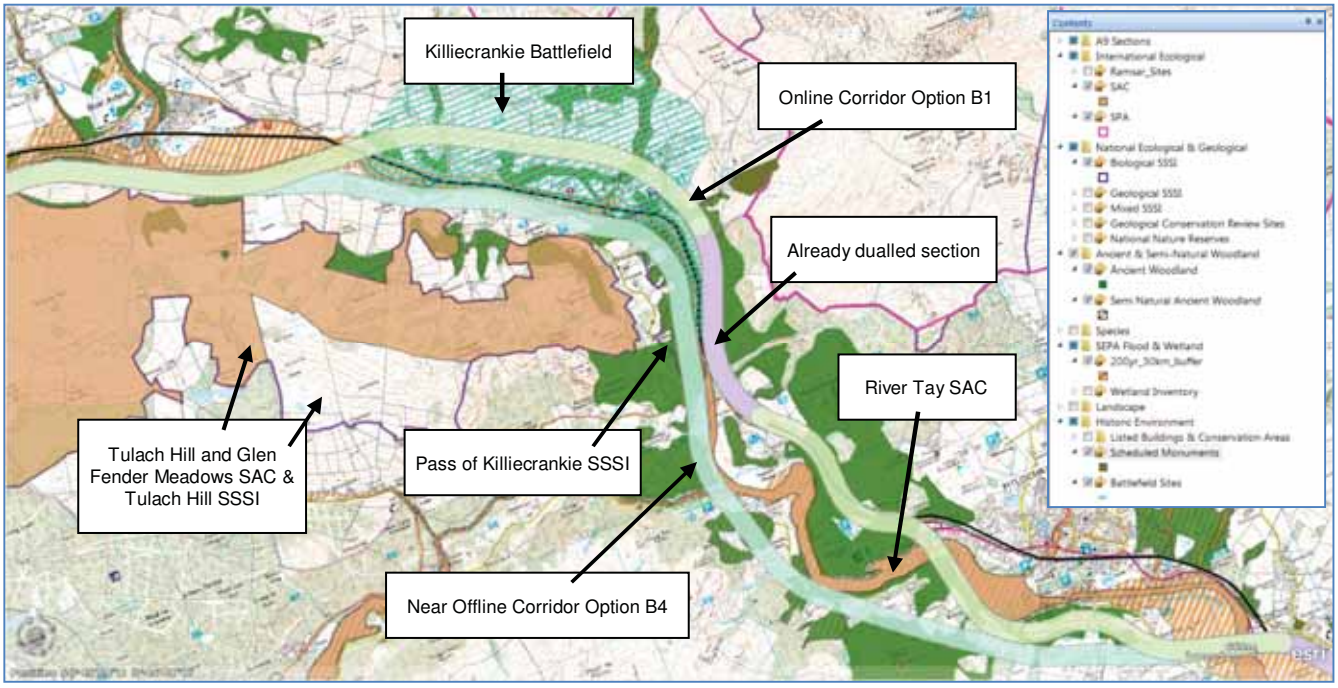

Figure 5-5 GIS Comparison of Options B1 & B4 – Killiecrankie Battlefield

Key Findings:

SEA considers that, with respect to Historic Environment (Battlefields), the online corridor option has the potential to present **major adverse effects** at the site level.

Near offline Option B4 has the potential to reduce effects on the site; however, when considered in the wider local context is likely to present **major adverse impacts** on other constraints.

On balance, SEA recommends the online option as preferable, with site level mitigation.

Site level options should be developed via route alignment studies and more detailed environmental assessment, in consultation with Historic Scotland and other key stakeholders, to inform detailed designs and to manage change in a sympathetic manner.

With strategic mitigation recommendations in place, SEA considers that residual impacts on the battlefield would be low in magnitude, resulting in a **moderate adverse effect**.

5.5.3 Historic Gardens and Designed Landscapes (GDL)

There are three GDL designations crossed by the 200m corridor, as noted below.

Table 5.21 Baseline GIS – Gardens and Designed Landscapes (GDL)

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	% of A9 Section	% of Total Corridor
Section A	Murthly Castle GDL	8,819,709	933,609	11%	22%	4%
Section A	The Hermitage GDL	447,699	22,056	5%	0.5%	
Section B	Blair Castle GDL	10,790,319	526,115	5%	7.5%	

Murthly Castle
An outstanding landscape which makes a major contribution to the surrounding Tay Valley scenery and provides an attractive setting for several category A listed buildings. Today's early 19th century layout overlays an early 17th century one, and some early trees can still be seen. The A9 passes through the designed landscape with a significant section already dualled. Further dualling effects will be limited at this location.

The Hermitage
An outstanding example of an 18th century picturesque landscape, comprising buildings, paths, trees and viewpoints, which exploit the naturally dramatic Highland gorge setting.

Blair Castle
Outstanding in every category, the 1000-hectare landscape has been a masterpiece of formal design from its inception in the mid 1700s, and continues to be so today. It comprises parkland, woodland, an 18th century wilderness, formal gardens, and a recently restored walled garden. A fine example of a surviving mid-18th-century formal landscape with parkland and woodland enclosures, woodland copses, 'wilderness' and formal gardens.

Table 5.22 Baseline GIS – Near Offline Options Comparison – GDL

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
GDL	Less (0.21 sq km) crossing GDL boundaries	Same	Same	Slightly less (0.05 sq km) crossing GDL boundaries

In terms of total surface area, Option A6 looks as though it may be favourable; however, the difference is due to its divergence from the online option at the end of the dual carriageway section in the Murthly Castle area. Option A6 effectively dissects The Hermitage GDL, with the potential for major adverse effects on the grounds, gardens and woodland within this National Trust property and designated site.

SEA therefore considers Option A6 as less favourable than the online corridor in this area.

In Section B, Option B5 straightens off some bends in the road and could potentially increase the distance between the dualled A9 and the Blair Castle GDL site boundaries. Depending on other constraints in the area; Option B5 may be favourable.

There are other GDL areas in the region, including Scone Palace (already dualled section), Dunkeld House (opposite side of the River Tay), Falls of Bruar (opposite side of the Highland Mainline), Kinrara (opposite side of Loch Alvie and the Highland Mainline), and Doune of Rothiemurchus (opposite side of the Highland Mainline and River Spey).

Each of these GDL lie outwith the 200m corridor and are separated by the physical features noted, so are not considered at risk of direct impacts. There will likely remain some risk of indirect visual effects on these GDL, depending on the level of screening between the sites and the dualled A9. Given their proximity to the current route, effects on setting are expected to be minimal; however, detailed designs will need to be informed by local visual impact assessment to include effects on the setting of these designed landscapes.

In all cases, local level consultation with Historic Scotland on alignment and detailed design will be required to ensure that the road is better integrated with its surroundings and works to minimise the impacts of road furniture, including signs, lighting and structures.

Key Findings:

SEA considers that, with respect to Historic Environment (Gardens and Designed Landscapes), the online corridor option has the potential to present locally **minor adverse effects** at the site level. These are generally considered to be related to visual change associated with widening as opposed to physical losses.

Near offline Option A6 is likely to present **major adverse impacts** on The Hermitage GDL, as it would lead to physical loss of features within the site boundary. On this basis, SEA considers the online option more favourable in this area.

Near offline Option B5 could potentially reduce effects around the Blair Castle GDL, depending on the consideration of other constraints and local topography.

5.5.4 Conservation Areas

Birnam is the only Conservation Area in the study area crossed by the 200m online corridor.

Table 5.23 Baseline GIS – Conservation Areas (CA)

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	% of A9 Section	% of Total Corridor
Section A	Birnam Conservation Area	279,737	73,249	26%	2%	0.2%

Both the online and near offline Option A6 run through the Birnam CA and, as trees within Conservation Areas are deemed to be protected, Option A6 would present greater risks of major adverse effects due to the need to cut a swathe through well established woodlands within the CA boundaries. Online dualling will likely require some tree removal/ edge clearance, but not to the same extent as Option A6.

In conjunction with the other reasons noted above, SEA determines that Option A6 is less favourable than the online corridor in this area.

There are other conservation areas in the region of the A9, including at Dunkeld, Pitlochry and Inverness; however, these are all outwith the 200m corridor and both Dunkeld (Tay) and Pitlochry (Tummel) are on the opposite of the river from the current carriageway and corridor options. They are therefore not considered subject to direct impacts.

5.5.5 Listed Buildings (LB)

Each of the 51 Listed Buildings noted below lies within the 200m corridor along the route. Those located around sections which are already dualled are noted by grey rows, and are considered unlikely to be affected by A9 dualling.

There are two buildings noted by blue rows which are located at the outer edge of the 200m corridor (both over 90m from the A9 centre line), near transition zones between dual and single carriageways. These are considered unlikely to be directly affected by dualling.

Of the 39 remaining LB, 12 are identified within 50m of single carriageway sections, highlighted in orange, and may be at higher risk of direct and/ or indirect effects.

Table 5.24 Baseline GIS – Listed Buildings (LB)

A9 Section	LB_ID	LB-REF	Category	NEAR_DIST
Section A	343721	Murthly Castle, Birnam Burn, Roman Bridge	A	83
Section A	343715	Dunkeld And Birnam Station	A	28
Section A	351897	Belvedere House	B	31
Section A	343740	Inver, Neil Gow's Cottage	B	45
Section A	343700	Birnam, Perth Road, Macbeth Cottage	B	81
Section A	343708	Inver, The Square, Old Inn	B	94
Section A	346935	Birnam Burn, Road Bridge	C(S)	68
Section A	343741	Inver, Craigview Cottages	C(S)	40
Section A	346929	Birnam, Gladstone Terrace, Terrace Block	C(S)	53
Section A	343647	Birnam, Station Road, Merryburn Hotel	C(S)	63
Section A	343654	Birnam, Gladstone Terrace, Dunsville	C(S)	66
Section A	343705	Inver, Cottage, Belvidere Cottage	C(S)	67
Section A	343653	Birnam, Gladstone Terrace, Craigielea	C(S)	68
Section A	343648	Birnam, 1 Birnam Terrace	C(S)	75
Section A	343649	Birnam, 2, 3 Birnam Terrace	C(S)	77
Section A	343650	Birnam, 4, 5 Birnam Terrace	C(S)	82
Section A	343652	Birnam, 8, 9 Birnam Terrace	C(S)	86
Section A	343651	Birnam, 6, 7 Birnam Terrace	C(S)	86
Section A	346934	Inver, Inver Square, 2 Ladeside Cottage	C(S)	94
Section A	343707	Inver, Inver Square, 2 Ladeside Cottage	C(S)	94
Section A	343646	Birnam, Station Road, Parkview	C(S)	97
Section B	344453	Haugh Cottages, Cross	B	14
Section B	337062	Guay Farmhouse	B	37
Section B	337556	Shierglas	B	38
Section B	337059	Dowally, St Anne's Church And Churchyard	B	55
Section B	337060	2, Dowally Village	C(S)	39
Section B	337061	3, 4 Dowally Village	C(S)	39
Section B	337557	Shierglas	C(S)	40
Section B	394963	Faskally, Kennel Cottage	C(S)	90
Section B	394951	Pass Of Killiecrankie, Tigh Na Geat	C(S)	94
Section B	351660	Allt Essan, Tollhouse	C(S)	92
Section B	394949	Moulin, Atholl Road, Craigeach	C(S)	97
Section C	337531	Dalnacardoch Lodge	B	54
Section C	399556	Dalnamein Bridge (Large) On Former Route Of A9	B	48
Section C	337526	Clunes Lodge	B	92

A9 Section	LB_ID	LB-REF	Category	NEAR_DIST
Section C	337528	Dalnamein Lodge, Allt Anndeir, Old Bridge	C(S)	59
Section D	339626	Crubenmore, Old Bridge	B	83
Section D	339627	Dalwhinnie, Wade Bridge	B	93
Section E	332348	Balavil, Obelisk And Burial Ground	B	46
Section E	335587	St Drostan's Chapel	B	49
Section E	335588	St Drostan's Chapel, Graveyard	B	56
Section E	332347	Balavil Mains And Steading	B	69
Section E	337985	Kincraig, Former Meadowside Hospital	B	81
Section E	332379	Dunachton, West Lodge	B	93
Section E	332377	Belleville House, East Lodge	C(S)	52
Section F	338296	Carrbridge Station, Waiting Room	B	83
Section F	338295	Carrbridge Station, Footbridge	B	90
Section F	338297	Carrbridge Station, Store	B	98
Section F	332410	Daviot Church Of Scotland Manse	B	76
Section F	332409	Daviot Parish Church Of Scotland And Burial Ground	B	81
Section F	340072	Bogbain Farmhouse	C(S)	34

Dunkeld and Birnam Station is the only Category A Listed Building found within 50m of a single carriageway section. Dualling issues and alignment options around this particular building will need to be considered in much more detail at the local level, informed by consultations with the Local Authority, Historic Scotland and other relevant stakeholders.

Route alignment studies around other LB within 50m of the current route should similarly be informed by local level survey and consultation to avoid direct effects wherever possible.

SEA considers that the buildings at distances greater than 50m should be avoidable via selection of route alignment, within the context of other constraints.

Table 5.25 Baseline GIS – Near Offline Options Comparison (LB)

	Summary comparison of near offline options against the online corridor option			
	Option A6	Option B2	Option B4	Option B5
LB	Same number at dualled sections Overall 11 fewer when compared with Option A1	Same number at dualled sections Overall 5 fewer when compared with Option B1	Bypasses one dualled section so 3 fewer Overall 3 more affected when compared with Option B1, and more Cat B	Same

The comparison of near offline options indicates fewer Listed Buildings within the 200m Option A6 corridor; however, as previously discussed, this Option presents risks of major adverse effects to other historic environment features, which SEA considers makes this Option less favourable than the online corridor.

As Option B2 runs to the opposite side of the River Tay and the Highland Mainline, there are fewer LB within the 200m near offline corridor; however, the value of this Option needs to be considered in the context of other constraints.

Option B4 bypasses the currently dualled section at the Pass of Killiecrankie, and would present additional risks to LB than the comparative online corridor.

Key Findings:

SEA considers that, with respect to Historic Environment (Listed Buildings), in the context of other constraints, the online corridor option is preferable to near offline options A6, B2 and B4.

Route wide, 39 Listed Buildings are identified within the 200m online corridor, around single carriageway sections, and route alignment studies should aim to avoid these heritage features as a primary principle.

Avoidance will mean that online dualling has the potential to present locally **minor adverse effects** on setting at the site level.

Where avoidance is not possible via route alignment studies, risk of loss is considered low; however, dualling has the potential for **moderate to major adverse effects** at the site level.

Detailed environmental assessment and local level consultation will be required to determine suitable site level design mitigation.

5.5.6 Unscheduled Archaeology

SEA recognises that A9 dualling could potentially uncover or damage archaeological remains through excavation/ earthworks along the route; however, it is not considered an issue for detailed consideration at the strategic programme SEA level.

On the advice of Historic Scotland, local historic environment records have been requested from the relevant local authorities and will be added to the A9 dualling GIS data bank.

This bank of information will help advise route alignment studies and local survey work at more detailed design stages. Where considered necessary, alignment studies will be supported by archaeological specialists/ survey.

5.5.7 Strategic Considerations – Historic Environment

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to the Historic Environment.

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.26 SEA Strategic Considerations – Historic Environment

A9 dualling should…
1. As far as possible, ensure road alignments avoid direct impacts on heritage assets and archaeological features
2. Ensure effective consideration of battlefield sites, including their setting, vertical and horizontal alignments and topography issues, to avoid or minimise effects which may impact battlefield setting, context or interpretation
3. Establish detailed survey, evaluation and recording of those sites directly affected by preferred route alignments, prior to construction work commencing
4. Target archaeological monitoring in the form of watching briefs during construction at archaeologically sensitive locations

5.6 Biodiversity, Flora & Fauna

A9 dualling presents a number of challenges and opportunities with respect to biodiversity, at the local and regional levels. Challenges include minimising construction stage effects in terms of noise/ vibration disturbance and pollution risks; however, these are expected to be managed via regulatory compliance, project level environmental impact assessment and best practice Construction Environmental Management Plans.

Strategic programme issues relate more to the consideration of corridor options around designated biodiversity sites, including Natura, SSSI and NNR sites, as well as embedding design principles on the enhancement of habitat connectivity, in terms of improving the permeability of the route for species crossings.

In general, it is considered that although online widening will increase the overall width of the road, it is likely to present fewer risks than construction of offline sections, which could lead to further fragmentation. SEA considers that the key biodiversity issues relate to:

- avoidance of designated sites and important habitats;
- limiting land take and the loss of soils;
- identifying opportunities to maintain and enhance links between habitats to minimise fragmentation and barriers to species movement; and
- avoiding and minimising effects of construction on the water environment.

Table 5.27 provides a high level overview of GIS analysis on the key biodiversity constraints along the 200m wide online corridor, and each issue is discussed further below.

Table 5.27 Baseline GIS – Biodiversity, Flora, Fauna Overview

Feature type	# sites	% corridor area	% feature area
Ancient Woodland (AW)	142	20%	10%
Semi Natural Ancient Woodland (SNAW)	67	8%	27%
Special Site of Scientific Interest (SSSI)	8	7%	2%
Special Area of Conservation (SAC)	7	5%	0.6%
Special Protection Area (SPA)	2	2%	0.5%
National Nature Reserve (NNR)	2	1%	6%
Ramsar	1	0.7%	2%
Key Species			
Capercaillie	Qualifying interests for Kinveachy Forest SPA west of the A9, and Craigmore Wood, Anagach Woods, Abernethy Forest and Cairngorms SPAs east of the A9. Both Abernethy Forest and Cairngorms SPAs are, in places, less than 5km from Kinveachy Forest SPA and capercaillie may travel between locations across the A9.		
Deer	Found route wide with associated risk of accidents with vehicles, potential accident hotspots reported around Dunkeld-Birnam, Blair Atholl and the Moy-Tomatin-Craggie sections.		
Otter	Found route wide with potential hotspots recorded around Bankfoot, Kindallachan, Dalnaspidal, Drumochter, Glen Garry, Kingussie, Kincraig, Insh Marshes, Dalmagarry, Daviot, Tomatin.		
Red Squirrel	Found route wide but with less activity recorded around the less wooded areas of Glen Garry, Pass of Drumochter, Glen Truim and Slochd-Tomatin.		
Wildcat	Areas of activity recorded around Carrbridge, east of Aviemore, west of the A9 around the Highland Wildlife Park, west of Newtonmore, with a possible hotspot for particular focus around Carrbridge.		

5.6.1 Ancient Woodland (AW) and Semi Natural Ancient Woodland (SNAW)

SNH advice is that all woodlands recorded via the Ancient Woodland Inventory, whether shown on 1750 'Roy' maps or on 1860 OS 1st Edition maps, and whether it is of semi-natural or plantation origin, should be considered as high value, scarce habitat. SNH also advise that the significance of any losses depends on the nature of the individual area of habitat lost.

GIS analysis shows that Ancient Woodland (AW) covers 20% of the total surface area of the 200m wide online corridor, with higher individual levels of cover in Sections A, B, E and F.

The area of AW in Section D is around an already dualled stretch and is unlikely to be affected (highlighted row in Table 5.28).

The total area of AW in Section C is relatively low (6%); however, the percentage of AW potentially at risk in this Section is highest at 38% of the AW site area.

Table 5.28 Baseline GIS – Ancient Woodland (AW)

A9 Section	# AW sites within 200m	Total area (m2) of AW sites	Corridor Area (m2) in AW	% of AW sites area	% A9 section	% total corridor
Section A	19	11,523,400	1,154,035	10%	27%	3%
Section B	55	14,562,639	1,639,199	11%	23%	5%
Section C	5	851,156	325,978	38%	6%	1%
Section D	4	655,453	146,880	22%	5%	0.4%
Section E	40	18,392,790	1,933,651	11%	28%	6%
Section F	19	21,892,217	1,822,909	8%	23%	5%
Total 200m wide Online Corridor crossing AW feature areas =					**20%**	
Total AW feature areas in 200m wide Online Corridor =					**10%**	

SEA cannot determine the final route alignment within the 200m wide corridor, therefore it needs to be highlighted that, cumulatively, 10% of the total area of all the Ancient Woodland sites, which cross the 200m corridor boundary, could be at risk of some impact.

The real area at risk will be much lower than 10%, as the majority of AW within a 200m corridor will be avoided, with works mainly restricted to edge clearance to enable widening around the existing route. Even so, SNH advice is that edge effects (including higher light intensity, reduced shelter and reduced humidity) can extend up to 30m into a wood, effectively representing an increased loss of internal woodland habitat along a widened corridor.

With respect to Semi-Natural Ancient Woodland (SNAW), GIS analysis shows that SNAW covers 8% of the total surface area of the 200m wide online corridor, with higher individual levels of cover in Sections B and E.

The area of SNAW in Section D is located around an already dualled stretch and is unlikely to be affected further (highlighted row in Table 5.29).

The total area of SNAW in Section C is relatively low (5%); however, the percentage of the SNAW potentially at risk in this Section is highest at 45% of the SNAW site area. It should be noted that, in most cases, SNAW sites along the route are combined within AW sites.

SEA cannot determine the final route alignment within the 200m wide corridor, therefore it needs to be highlighted that, cumulatively, 27% of the total area of all the Semi-Natural Ancient Woodland sites, which cross the 200m corridor boundary, could be at risk of some impact.

The real area at risk will be much lower than 27%, as the majority of SNAW within a 200m corridor will be avoided, with works mainly restricted to boundary widening around the

existing route; however, as noted above edge effects will increase the loss of internal woodland habitat.

SNH advice is that this is particularly significant in areas of ancient semi-natural woodland, where the severity of potential impacts should not be under-estimated.

Table 5.29 Baseline GIS – Semi-Natural Ancient Woodland (SNAW)

A9 Section	# SNAW sites within 200m	Total area (m2) of SNAW sites	Corridor Area (m2) in SNAW	% of SNAW sites area	% A9 section	% total corridor
Section A	5	1,385,204	215,030	16%	5%	0.6%
Section B	19	1,173,165	472,084	40%	31%	1.4%
Section C	3	625,734	279,867	45%	5%	0.8%
Section D	3	535,150	141,890	27%	5%	0.4%
Section E	28	4,704,084	1,210,397	26%	18%	3.5%
Section F	9	1,521,232	376,363	25%	5%	1.1%
Total 200m wide Online Corridor crossing SNAW feature areas =					**8%**	
Total SNAW feature areas in 200m wide Online Corridor =					**27%**	

SEA considers it inevitable that A9 dualling will require some edge clearance to enable route widening, including safe boundaries for sight lines and to avoid additional roadside barriers.

In general, widening along the existing route is likely to present lower levels of risk to AW and SNAW, than the near offline options. Online widening will increase the distance across the road between woodlands, with subsequent edge effects; however, near offline options could introduce additional fragmentation within and through the woodlands.

SNH advise that when a wood is divided by a corridor, the effect is not merely to reduce the area of valuable habitat by the area of the corridor, but to create two smaller and generally isolated blocks of woodland. Such fragmentation will already have occurred along the length of the existing route and would be exacerbated by construction of new corridors through woodland.

Table 5.30 provides a high level comparison between the 200m online corridor and the near offline options in Section A and Section B.

Table 5.30 Baseline GIS – Near Offline Options Comparison – AW & SNAW

	Summary comparison of near offline options against the online corridor option			
	Option A6	**Option B2**	**Option B4**	**Option B5**
AW	More (0.34 sq km) within the Section A corridor footprint 30% more AW than online Option A1	Slightly less (0.04 sq km) within the Section B corridor footprint 2% less AW than online Option B1	Slightly less (0.06 sq km) within the Section B corridor footprint 4% less AW than online Option B1	Slightly more (0.07 sq km) within the Section B corridor footprint 4% more AW than online Option B1
SNAW	More (0.09 sq km) within the Section A corridor footprint 44% more SNAW than online Option A1	Same	More (0.29 sq km) within the Section B corridor footprint 64% more SNAW than online Option B1	Slightly more (0.01 sq km) within the Section B corridor footprint 0.4% more SNAW than online Option B1

This analysis indicates that Option A6 presents greater risks to AW and SNAW than the online corridor option in Section A. This near offline option would require a swathe cut through AW/ SNAW and is therefore considered less favourable than the online corridor.

With respect to Section B, Option B2 suggests a slightly lower level of risk to AW than the online corridor option; however, this Option would require cutting through a completely different

woodland area (Tay Forest Park on the opposite side of the River Tay). When compared with edge cutting on woodland already along the online corridor (e.g. a minor adverse effect at the local level), Option B2 would result in additional fragmentation within a woodland area, presenting greater adverse impacts. This near offline option is therefore considered less favourable than the online corridor.

Option B4 appears to affect a slightly lower overall area of AW; however, the level of SNAW at risk increases quite significantly. This option potentially represents new cuttings through AW/ SNAW north of Clunie Wood, around the Clunie Power Station and through the Pass of Killiecrankie SSSI, designated for upload oak woodland. This near offline option is therefore considered less favourable than the online corridor.

With respect to Option B5, slightly more AW and SNAW appears to be at risk; however, the single area of AW/ SNAW affected is at a point where the online corridor and Option B5 cross, i.e. the apex of a bend that B5 might straighten across. As this AW/ SNAW area is already dissected by the A9, and will require edge clearance to accommodate online widening, SEA does not consider Option B5 significantly different and does not therefore consider it less favourable than online widening at this location.

In terms of the avoidance and/ or minimisation of AW and SNAW habitat fragmentation, SEA assesses all near offline options, other than Option B5, as less favourable than the online corridor.

In online corridor areas where AW and SNAW are unavoidable via route alignment studies, potential impacts should be minimised by limiting the widened footprint of the road as far as possible, within safety requirements, and considering the flexibility to locate lay bys (and other footprint widening features) outwith designated woodland boundaries.

More detailed route alignment studies will be supported by local habitat surveys which should identify and consider the ecological value of the particular AW and SNAW site areas at risk. SNH advise that there should be a presumption against felling native trees; however, some areas may have been planted with commercial species in the past, and may be less ecologically valuable at the local level. Conversely, some areas could be highly valuable, with ancient native trees within the footprint area at risk. These considerations must be further clarified via the local EA (Environmental Assessment), to ensure that route alignment studies are fully informed.

SEPA have advised that, where tree felling is required, the local ES (Environmental Statement, the key output of the EA) must detail how the waste hierarchy has been applied to deliver the best overall environmental outcome. Use of felled wood should be carefully considered, and SEPA recommend liaison with Forestry Commission Scotland (FCS), to investigate whether FCS could undertake felling works, as this may eliminate waste issues.

Where dualling widens the distance between woodlands, it is likely to present secondary adverse effects, in terms of widening a barrier to species movement between habitats. SNH advise that many woodland species are unable, or less able, to move across non-wooded habitat. Local populations may be affected, including red squirrels, badgers, pine marten and capercaillie.

Local level design mitigation should be informed by ecology specialists, and would typically include mammal tunnels through the road structure (above flood water height), ledges in culverts and even rope bridges between higher trees (at sufficient clearance for high vehicles/ industry traffic, e.g. wind turbine infrastructure).

Any permanent losses of AW, SNAW, and other non-designated woodland habitat should be cumulatively compensated for in other areas, particularly in areas locally identified as opportunity sites for woodland. When considering the area of new woodland required as

mitigation for woodland lost, full consideration should be given to the total loss of interior woodland habitat, and not just the immediate area felled.

In cases where felling of mature semi-natural woodland is required, appropriate mitigation should be discussed with SNH and FCS. SNH advise that creation of new woodland as mitigation should use natural regeneration. Where this is not possible native planting may be acceptable, where there are benefits from introducing native species of trees and shrubs not currently present on site; however, this should be considered in discussion with SNH and FCS.

SNH also advise that mitigation and restoration plans for woodlands will be required, for approval, prior to commencement of construction. In those plans, consideration should be given to the needs of local species; for example, in areas inhabited by both red and grey squirrels, small-seeded species (such as birch and pine) should be encouraged in preference to large-seeded species (such as oak and hazel).

Key Findings:

SEA considers that, in terms of Biodiversity, Flora and Fauna (Ancient and Semi Natural Ancient Woodland), A9 dualling will likely result in **minor losses at local levels** around widened road boundaries. Taking into account the additional effects on internal woodland habitat, to be expected with widening edge effects, SEA finds that online A9 dualling is likely to present, cumulatively, a **moderate adverse effect** on AW and SNAW.

Should any of near offline routes A6, B2, B4 be taken forward these would be assessed as presenting **major adverse effects,** in terms of additional losses and habitat fragmentation.

Route alignment studies within a preferred corridor, coupled with local level survey and environmental assessment to inform design work should avoid, or where this is not possible, minimise land take from Ancient, Semi-Natural Ancient, and other Woodlands.

Where land take from woodland is unavoidable via alternative alignment considerations, appropriate mitigation and restoration plans will be required.

Similarly, **local minor adverse secondary effects** are likely for species, in terms of a widening of the current infrastructure barrier between woodlands, raised to **locally major adverse effects** should any new routes be cut through woodlands.

SEA considers that local level mitigation in terms of pipes, tunnels, culverts, rope bridges between higher trees, and pedestrian subway crossings will improve permeability and connectivity across the road structure, reducing the severity of secondary adverse barrier effects.

SEA recommends *that outline Strategic Principles for Biodiversity include a presumption in favour of:*
(1) avoiding land take from AW and SNAW wherever possible,
(2) minimising the dualled route width through AW and SNAW areas to limit additional barrier effects; for example, considering the viability of locating lay bys outwith high value woodland boundaries.

5.6.2 Natura 2000 and Ramsar Sites

At SEA Scoping stage, a Habitats Regulations Appraisal (HRA) Screening exercise identified the range of Natura 2000 (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) and Ramsar sites within 5km of the current A9. The HRA Screening also considered additional sites, identified by SNH, which may demonstrate ecological or hydrological connectivity to the sites within 5km. Following SNH feedback, the HRA Screening exercise was revised to provide more detail on the potential for Likely Significant Effects (LSE) on the range of sites identified.

The tables below provide a summary of GIS analyses on the SAC, SPA and Ramsar sites identified within the 200m online corridor. A zero in the NEAR_DIST column indicates a crossing of the designated site (highlighted in orange), and the pale blue row indicates that the A9 is already dualled around the Slochd SAC, which is therefore not expected to be subject to any LSE by further dualling activity.

Table 5.31 Baseline GIS – Special Areas of Conservation (SAC)

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in feature	NEAR _DIST	% of feature		% A9 section	% total corridor
Special Areas of Conservation (SAC)								
Section A	River Tay	94,786,593	82,188	0.0	0.1%	0.1%	2.7%	0.3%
			32,670	0.0	0.03%			
Section B	River Tay	94,786,593	101,999	0.0	0.1%	0.7%	9%	1.8%
			280,875	0.0	0.3%			
			111,779	0.0	0.1%			
			130,389	0.0	0.1%			
			1,457	81	0.0%			
			19	100	0.0%			
			3	100	0.0%			
			8	100	0.0%			
Section B	Shingle Islands	237,540	1,457	81	0.6%	1.5%	0.03%	0.01%
		61,088	552	85	0.9%			
Section B	Tulach Hill and Glen Fender Meadows	14,953,879	1,232	63	0.01%	0.01%	0.02%	0.004%
			189	99	0.0%			
Section C	Drumochter Hills	49,690,813	263,825	35	0.5%	0.3%	5.6%	0.9%
		44,764,788	56,013	39	0.1%			
			4,142	39	0.01%			
Section C	River Spey	57,283,626	37,843	10	0.07%	0.07%	0.7%	0.1%
			4,142	39	0.01%			
Section D	River Spey	57,283,626	76,565	21.8	0.1%		2.7%	0.2%
Section E	Insh Marshes	11,587,704	229,553	0.0	2%		3.3%	0.7%
	River Spey	57,283,626	11,119	0.0	0.02%	0.4%	3.5%	0.7%
			229,553	0.0	0.4%			
Section F	River Spey	57,283,626	11,124	0.0	0.02%		0.1%	0.03%
Section F	Slochd	917,783	22,113	50	2.4%		0.3%	0.06%
Total River Tay SAC feature area crossed by 200m wide Online Corridor =							**0.8%**	
Total River Spey SAC feature area crossed by 200m wide Online Corridor =							**0.7%**	
Total 200m wide Online Corridor crossing SAC feature areas =							**5%**	
Total SAC feature areas in 200m wide Online Corridor =							**0.6%**	

River Tay SAC (Sections A and B)

The area is designated because of one habitat, oligotrophic to mesotrophic standing waters (not expected to be affected by A9 dualling), and the presence of Atlantic salmon, sea lamprey, brook lamprey, river lamprey and otter. The River Tay is one of the best sites in Britain for these species, as it supports significant populations/ numbers.

For the majority of Section A, the River Tay SAC runs outwith the 200m corridor although there are at least three crossings by the A9. The key issues to be managed include construction level controls, with respect to sedimentation, pollution, spillages and run off to the Tay and its tributaries. Detailed consultation with SNH, via project level Appropriate Assessment, on the form of any new or widened crossings will be required.

Key features to be considered at the more detailed design stages include the avoidance of in river structures, prevention of siltation due to run off and bankside works, and local level survey for otter to avoid habitat loss and disturbance to otter holts. At the strategic programme level, SEA considers the risk of LSE on the River Tay SAC, in Section A, to be minimal and manageable through local level controls and design advice from SNH.

In Section B, there are at least eight crossings of the River Tay SAC and a number of areas where the SAC boundary crosses the 200m corridor boundary; however, these areas are at a distance considered sufficient by SEA to avoid LSE on the SAC.

Route alignment studies within the 200m corridor should seek to avoid the River Tay SAC by maximising the distance between the dualled route and the SAC (suggested minimum of 50m where practicable), and dualling to the opposite side of the existing carriageway where possible. Crossings present the same issues for consideration as noted for Section A.

The other factor to be considered is the provision of road surface drainage and SUDS, where the drainage outfall is to the River Tay or its tributaries. SUDS will lead to an improvement in the quality of road surface discharge, leading to locally minor, and potentially cumulatively moderate, benefits for the SAC. There may; however, be a requirement to provide three levels of SUDS treatment for a discharge to a SAC and the issues associated with this will require to be considered in further detail with both SNH and SEPA, to provide appropriate strategic guidance for later design stages.

Shingle Islands SAC and Tulach Hill and Glen Fender Meadows SAC (Sections A and B)

GIS also highlights that the 200m online corridor boundary crosses the designated site boundaries of the Shingle Islands and the Tulach Hill and Glen Fender Meadows SACs. The Shingle Islands SAC is within the River Tay watercourse, and SEA considers that with effective site level pollution controls, there is no risk of LSE on the qualifying interest features of the Shingle Islands SAC at the strategic level.

The Highland Mainline Railway (HML) provides a physical barrier between the Tulach Hill SAC site and the current A9. The site is also at a higher elevation than the A9, which minimises any risk of runoff effects. Some of the qualifying interest feature species in the Tulach Hill SAC site may be sensitive to changes in air quality; however, SEA considers that such changes will be minimal. (Note: HRA Screening recommends this site is taken forward for strategic level Appropriate Assessment).

By way of providing a comparison between the online corridor and the near offline corridor options in Sections A and B, the table below considers the difference in total surface area of each near offline corridor option bordering these SAC designations.

Table 5.32 Baseline GIS – Near Offline Options Comparison – SAC

	Summary comparison of near offline options against the online corridor option			
	Option A6	**Option B2**	**Option B4**	**Option B5**
SAC	Less (0.08 sq km) of the total corridor footprint crosses the River Tay SAC boundaries New crossings required	Less (0.12 sq km) of the total corridor footprint crosses SAC boundaries New crossing around Shingle Islands and River Tay SAC	Slightly more (0.01 sq km) of the total corridor footprint crosses SAC boundaries Additional crossings of River Tay SAC required, also closer to Tulach Hill and Glen Fender Meadows SAC, on the opposite side of the HML	Less (0.1 sq km) of the total corridor footprint crosses the River Tay SAC boundaries Potential new crossing location required

As Option A6 diverges away from the existing route, it is further away from the Tay for much of the option length; however, it would require at least two additional crossings of the River Tay SAC in new areas. This has the potential to present greater risks of LSE than the online corridor. It is accepted that dualling may result in existing crossings requiring works near the riverbank; however, the potential impact of similar works in new, presently less disturbed/ engineered areas, as would be the case with Option A6, would make this less favourable than the online corridor.

In Section B, Option B2 is also further from the River Tay SAC for much of its length; however, this Option lies fully within the Tay flood plain (a wider area than the SAC boundary) and would require a large crossing in the vicinity of the Shingle Islands SAC. In the context of other constraints, SEA considers this option less favourable than the online corridor.

Option B4 provides an alternative route around Pitlochry and the Killiecrankie Battlefield site; however, this Option is likely to present higher risk of LSE in terms of the River Tay and Tullach Hill and Glen Fender Meadows SACs. This near offline Option runs across the opposite side of the Pass of Killiecrankie, thereby negating any physical barrier effects of the HML and introducing additional infrastructure between the Tulach Hill and River Tay SACs. SEA considers that Option B4 is therefore less favourable than the online corridor.

Option B5 straightens off some of the bends in the current route at the northern end of the Tulach Hill site, creating additional distance between the road and the River Tay SAC for the majority of the Option length. SEA considers that, in terms of the River Tay SAC only, this Option might be favourable when compared with the online corridor.

With respect to the remaining online corridor Sections C–F, there are a number of different designations that are relevant:

- River Spey SAC (Sections C, D, E and F)
- Drumochter Hills SAC and SPA (Section C)
- Insh Marshes SAC (Section E)
- River Spey – Insh Marshes SPA and Ramsar (Section E)

The tables below provide summary GIS analyses on the SPA and Ramsar designations, where a zero in the NEAR_DIST column indicates that the current A9 crosses the site.

Table 5.33 Baseline GIS – Special Protection Areas (SPA)

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in feature	NEAR _DIST	% of feature		% A9 section	% total corridor
Special Protection Areas (SPA)								
Section C	Drumochter Hills	49,690,819	263,820	35	0.5%	0.3%	6%	1%
		44,764,784	60,147	39	0.1%			
Section E	River Spey - Insh Marshes	11,587,719	229,555	0.0	2%		3%	0.7%
Total 200m wide Online Corridor crossing SPA feature areas =							**2%**	
Total SPA feature areas in 200m wide Online Corridor =							**0.5%**	

Table 5.34 Baseline GIS – Ramsar Sites

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in feature	NEAR _DIST	% of feature	% A9 section	% total corridor
Ramsar							
Section E	River Spey – Insh Marshes	11,587,717	229,555	0.0	2%	3%	0.7%

To summarise the consideration of multiple designations:

River Spey SAC (Sections C, D, E and F)

- No crossings in Sections C and D (not including smaller watercourse crossings/ culverts).
- Closest point around 10m in Section C and 22m in Section D.
- At least five crossings in Section E and at least two crossings in Section F (not including smaller watercourse crossings/ culverts).

The River Spey is designated because of the presence of freshwater pearl mussel, sea lamprey, Atlantic salmon and otter. It is one of the best sites in Britain as it supports significant populations/ numbers of these species.

The potential effects for freshwater pearl mussel relate to disturbance and habitat loss; for Atlantic salmon to possible sedimentation, pollution and habitat loss and for otter to possible sedimentation, pollution and disturbance. Culverts and bridge construction works also have the potential to either directly or indirectly damage freshwater pearl mussel populations.

Key issues to be managed include construction level controls, with respect to possible sedimentation, pollution, spillages and run off to the Spey and its tributaries. Detailed consultation will be required with SNH, via project level Appropriate Assessment, on the form of any new or widened crossings.

Key features to be considered at the more detailed design stages include the avoidance of in river structures, prevention of siltation due to run off and bankside works and local level survey for freshwater pearl mussels and otter to avoid habitat loss and disturbance to otter holts. At the strategic programme level, SEA considers the risk of LSE on the River Spey SAC to be minimal and manageable through local level controls and design advice from SNH.

Route alignment studies within 200m corridors should avoid the River Spey SAC by maximising the distance between the dualled route and the SAC (suggested minimum of 50m where practicable) and dualling to the opposite side of the existing carriageway where possible.

The other factor to be considered is the provision of road surface drainage and SUDS, where the drainage outfall is to the River Spey or its tributaries. SUDS will lead to an improvement in the quality of road surface discharge, leading to locally minor, and potentially cumulatively moderate, benefits for the SAC. There may, however, be a requirement to provide three levels of SUDS treatment for a discharge to a SAC and the issues associated with this will require to be considered in further detail with both SNH and SEPA, to provide appropriate strategic guidance for later design stages.

Drumochter Hills SAC and SPA (Section C)

This area is designated as SPA due to upland breeding birds; merlin and dotterel, and the area is one of very few sites in Britain to support significant numbers of these rare birds.

The area is designated as SAC due to the presence of several habitats; European dry heaths, alpine and boreal heaths, sub-Arctic Salix spp. scrub, siliceous alpine and boreal grassland, active blanket bog (a European priority interest), north Atlantic wet heaths, species-rich Nardus grassland, hydrophilous tall herb fringe communities, siliceous scree of the montane to snow level and siliceous rocky slopes with chasmophytic vegetation. The area is recognised as one of the best places in Britain for these habitats, and SNH advice is that there should be no net loss of qualifying habitat. Impacts could potentially arise from habitat loss, damage or modification through road construction and associated works, including changes to drainage and hydrological connectivity within the site.

The A9 runs along the valley floor through Pass of Drumochter and the SAC and SPA designations are divided in two by the infrastructure corridor on the valley floor. As such, there is a break through the SAC/ SPA site boundaries of around 75m at the narrowest point.

Travelling north through the Pass, the A9 is more constrained to the western side by the HML and the River Spey SAC. Route alignment studies through the Pass will need to minimise the overall width of the dualling footprint, as well as roadside infrastructure, such that future maintenance requirements are also minimised. This will likely influence the placement of lay bys, as the minimisation of the dualled width may lead to lay bys being located outwith the SAC/ SPA boundaries.

At the strategic programme level, SEA considers that there is sufficient clearance in the Pass to avoid the SAC and SPA site boundaries on either side; however, given their proximity, detailed route alignment studies and designs will need to be supported by local level survey and Appropriate Assessment to ensure no LSE on the Drumochter Hills qualifying interest features.

Insh Marshes SAC and River Spey – Insh Marshes SPA and Ramsar (Section E)

Insh Marshes is a major wetland site covering a section of the River Spey from Newtonmore to Kincraig. At over 5km long and 1km wide, it is the largest single unit of poor fen floodplain mire/ transition mire in the UK, and one of the most natural systems left of its type in the UK. String sedge *Carex chordorrhiza* is a rare sedge that occurs at this site and only one other Scottish site in the UK. It is more frequently found in this mire type in continental Europe.

The SPA lies within the flat valley floor of the River Spey between Newtonmore and Kingussie and includes Loch Insh. It is of importance for a significant and diverse assemblage of rare breeding waterfowl and raptors in summer (including nesting Osprey *Pandion haliaetus*), and large numbers of wintering wildfowl, including Icelandic Whooper Swan *Cygnus cygnus*.

The extensive marshes provide ideal feeding, resting and shelter areas for otter, supporting a good population which is linked to the River Spey population. The Feshie-Spey confluence has extensive river shingles which support a large number of rare invertebrates, and the main

habitat types include: woodland, floodplain mire, bog, swamp, tall herb fen, wet heath, grassland, river shingles, dynamic alluvial fans.

SEA considers the River Spey/ Insh Marshes area as the most challenging of the Natura/ Ramsar site designations. Travelling north, the A9 runs as a single carriageway, on an embankment, alongside the River Spey/ Insh Marshes site, before crossing the site via a bridge at Kingussie. From the crossing at Kingussie, the A9 runs along the northern edge of the Insh Marshes, in a cutting, before diverging away to the north just before Kincraig.

The key issues in this area can be summarised as:

- Potential need to widen the approach embankment, unless there is sufficient clearance to accommodate a dual carriageway;
- Need to widen, or provide an additional, or alternative, crossing at Kingussie;
- Need to widen, or provide additional, cuttings along the northern boundary of the Insh Marshes;
- Need to accommodate drainage improvements and SUDS within the dualled route footprint;
- Need to consider each of these issues in terms of the qualifying interest features of each designation, and the potential effect on the hydrological regime and flooding of the Spey and the Marshes.

At the strategic programme level, SEA considers that each of these issues can be addressed in engineering terms through measures such as the consideration of route alignments to the opposite side of the current carriageway from the designations, or the potential use of a single span crossing structure, to avoid potential LSE that might be associated with land take within site boundaries.

This particular area will require detailed consultations with SNH and SEPA to ensure a suitably balanced solution that addresses Habitat Regulations requirements through detailed design and local level Appropriate Assessment. Potential water quality and flooding implications associated with drainage and SUDS requirements will also require consideration.

5.6.3 Other Natura Sites – HRA Summary

As mentioned previously, the HRA Screening exercise considered a wider range of sites than those highlighted as within the 200m corridor and discussed above. By way of providing a summary of the key aspects of the HRA Screening:

- 31 SPAs, SACs and Ramsar designated sites were included in the screening;
- 23 international designations were determined as not subject to LSE and therefore do not require strategic level Appropriate Assessment (AA);
- Plans/ projects considered most likely to present potential cumulative effects in-combination with A9 dualling included the Highland Mainline Improvements Project, the Beauly-Denny Power Line and the Allt Duine Wind Farm;
- All other projects identified were considered to only have very localised impacts;
- Sites requiring strategic level AA are:
  - River Tay SAC;
  - Tulach Hill and Glen Fender Meadows SAC

  - River Spey SAC;
  - River Spey – Insh Marshes SPA and Ramsar site;
  - Insh Marshes SAC; and
  - Drumochter Hills SPA and SAC;
- The sources of potential LSEs on the above 8 international sites, after strategic avoidance and mitigation, were determined as:
  - Habitat loss and fragmentation;
  - Noise disturbance to fauna;
  - Impacts of airborne pollutants on habitats (NOx);
- Other pressures considered in the screening included;
  - Changes to hydrology;
  - Changes to water quality;
  - Possible barrier effects as a result of a wider road to some species (e.g. capercaillie and otters);
  - Recreation disturbance to some species (discounted at strategic level);
  - Lighting impacts on some species (discounted at strategic level).
- International sites screened out at the strategic AA stage may need to be considered again for project level HRA.

At the time of writing, the revised HRA Screening Report has been submitted to SNH for further comment and advice before undertaking a strategic programme level Appropriate Assessment on those sites identified as having the potential for LSE under A9 dualling.

Key Findings:

HRA Screening considers that, in terms of Biodiversity, Flora and Fauna (Natura and Ramsar sites), A9 dualling has the **potential to present Likely Significant Effects (LSE)** on the:

– River Tay SAC;

– Tulach Hill and Glen Fender Meadows SAC;

– River Spey SAC;

– River Spey – Insh Marshes SPA and Ramsar site;

– Insh Marshes SAC; and

– Drumochter Hills SPA and SAC.

SEA considers that dualling has the potential for **major adverse effects** on the Drumochter Hills and Insh Marshes sites, and **minor adverse effects** on the other designations.

Each of these sites will be examined further through strategic programme level Appropriate Assessment to consider a range of inter-related dualling issues, and determine effective strategic mitigation recommendations.

***SEA recommends** a workshop with SNH, SEPA and the Cairngorms National Park Authority (CNPA), during the SEA Environmental Report consultation period, to inform a strategic level Appropriate Assessment and the development of suitable guidance for later design stages around the Tay, Spey, Tulach Hill and Glen Fender Meadows, Drumochter Hills and Insh Marshes designated Natura and Ramsar sites.*

Any updated findings and recommendations of the strategic level AA will be incorporated into the SEA Post Adoption Statement and Monitoring Framework.

5.6.4 National Nature Reserves (NNR)

The A9 runs alongside two NNR sites in Section E; Insh Marshes (2% of the site overlaps the 200m corridor boundary) and Craigellachie (6% of the site overlaps the 200m corridor).

Table 5.35 Baseline GIS – National Nature Reserve (NNR) Sites

A9 Section	Feature_NAME	Feature Area (ha)	Corridor Area (m2) in feature	NEAR_ DIST	% of feature		% A9 section	% total corridor
National Nature Reserves (NNR)								
Section E	Insh Marshes	695.18	61,430	22	0.9%	2%	2%	0.5%
			21,440	23	0.3%			
			41,282	22	0.6%			
			34,870	32	0.5%			
	Craigellachie	257.46	150,300	15	6%		2%	0.4%
Total 200m wide Online Corridor crossing NNR feature areas =								**1%**
Total NNR feature areas in 200m wide Online Corridor =								**3%**

The Insh Marshes have been described as, "*the most important area of natural floodplain wetland in Britain, thanks to its unspoilt character and the number of birds, plants and invertebrates that live there. The area is undeniably beautiful and the value of the rich wildlife found at Insh Marshes is reflected in its many national and international conservation designations*".

SEA considers that, at the strategic level, potential effects on the Insh Marshes NNR site will be addressed via measures to address the Natura and Ramsar designations for the same area.

With respect to the Craigellachie NNR, the site is at a higher elevation than the A9, as the road wraps around the hillside. The area between the NNR site and built features on the opposite side of the A9 (e.g. the B9152 and hotels and caravan parks around Aviemore) is narrow, closing to 40-50m at some points.

SEA recognises this potential pinch point in Section E; however, it is likely that there is sufficient clearance to avoid encroaching on the NNR site via, for example, symmetrical online widening.

Detailed route alignment studies should seek to avoid encroaching upon the NNR site boundary; however, in the event that does not prove feasible, the supporting local level EA should consider appropriate mitigation measures in consultation with SNH.

Key Findings:

SEA considers that, in terms of Biodiversity, Flora and Fauna (National Nature Reserves), there is sufficient clearance around the current single carriageway to avoid encroaching on the Craigellachie NNR site, which would result in **no significant adverse effects**.

Should route alignment studies prove unable to avoid encroaching on this site, any land take should be minimised and would require consultation with SNH to determine appropriate mitigation measures.

Land take from the NNR would be minimal; however, as it would represent permanent loss within a national site, it could present potentially **major adverse effects at the site level**, depending on the sensitivity of the habitat/ species affected.

Strategic mitigation measures developed under the strategic AA for the Insh Marshes Natura and Ramsar designations will be designed to result in no LSE for the Natura designations, and SEA will ensure that these equally result in guidance to avoid significant adverse effects to the Insh Marshes NNR.

5.6.5 Sites of Special Scientific Interest (SSSI)

There are no biological or mixed SSSI identified within the 200m corridor in Sections A or F (including the near offline option A6 in Section A).

Table 5.36 Baseline GIS – Special Sites of Scientific Interest (SSSI) (Biological and Mixed)

A9 Section	Feature_NAME	SSSI TYPE	SITE Area (ha)	Corridor Area (m2) in feature	NEAR_ DIST	% of feature		% A9 section	% total corridor
Section B	Aldclune and Invervack Meadows	Biological	16.61	8,427	0.0	5%	33%	0.8%	0.2%
				37,615	8	23%			
				6,414	32	4%			
				1,639	76	1%			
	Pass of Killiecrankie		62.24	18,082	52	3%		0.3%	0.05%
	Shingle Islands		77.89	1,457	81	0.2%	0.3%	0.03%	0.01%
				552	85	0.1%			
	Tulach Hill		1666.83	1,232	63	0.01%	0.01%	0.02%	0.004%
				189	99	0.001%			
Section C	Drumochter Hills	Mixed	9688.13	1,575,429	0.0	2%		27%	5%
Section D	Drumochter Hills	Mixed	9688.13	101,946	8	0.1%		4%	0.3%
Section E	Alvie	Biological	339.01	33,986	5	4%		0.5%	0.1%
	Craigellachie		379.85	198,754	15	5%		3%	0.6%
	River Spey - Insh Marshes		1158.77	229,550	0.0	2%		3%	0.7%
Total 200m wide Online Corridor crossing Drumochter Hills SSSI feature area =								**2%**	
Total 200m wide Online Corridor crossing SSSI feature areas =								**7%**	
Total SSSI feature areas in 200m wide Online Corridor =								**2%**	

In the other sections, the 200m wide online corridor crosses the boundaries of eight SSSI sites designated for biological features, and Table 5.36 contains blue cells where a SSSI is located along an already dualled section. A zero value in the NEAR_DIST columns indicates that the current A9 crosses the designated site.

The majority of SSSI sites in Section B are separated from the online corridor by physical features, such as the Shingle Islands which lie in the River Tay watercourse, and Tulach Hill which is on a higher elevation than the A9 and separated by the Highland Mainline.

The Pass of Killiecrankie SSSI is separated from the online corridor by the physical topography of the area, and the A9 is already dualled at this point.

SEA considers that the only site with the potential to be affected by online dualling in Section B is the Aldclune and Inverack Meadows SSSI, designated for lowland calcareous grassland.

By way of providing a comparison between the online corridor and the near offline corridor options in Section B, Table 5.37 below considers the difference in total surface area of each near offline option through the SSSI designations.

Table 5.37 Baseline GIS – Near Offline Options Comparison – SSSI

	Summary comparison of near offline options against the online corridor option			
	Option A6	**Option B2**	**Option B4**	**Option B5**
SSSI	n/a	More (0.01 sq km) of the total corridor footprint crosses SSSI boundaries 10% more than Option B1 Requires an additional crossing over the Shingle Islands SSSI	Significantly more (0.27 sq km) of the total corridor footprint crosses SSSI boundaries 374% more than Option B1 Would dissect the Pass of Killiecrankie SSSI	Less (0.04 sq km) of the total corridor footprint crosses SSSI boundaries 56% less than Option B1 Greater potential to avoid the Aldclune and Inverack Meadows SSSI

The analysis demonstrates that near offline Option B2 would be likely to present greater risks to the Shingle Islands SSSI, as a crossing would be required around one of the island locations. SEA therefore considers Option B2 as less favourable than the online corridor.

Option B4 presents significantly higher risk to the Pass of Killiecrankie SSSI, designated for upland oak woodland, as this Option would cut directly through the site. Option B4 would also likely present a higher level of risk to the Tulach Hill SSSI. SEA therefore considers Option B4 as less favourable than the online corridor.

However, Option B5 actually presents lower risks to the Aldclune and Inverack Meadows SSSI, as it straightens the bends on the A9 that border the site boundaries. SEA considers that, in terms of the Aldclune and Inverack Meadows SSSI only, this Option might be favourable when compared with the online corridor.

With respect to the Drumochter Hills SSSI in Sections C and D, the boundaries of the SSSI designation are wider than those of the SAC and SPA designations. There is no break in the SSSI designation through the central valley floor and on the exit of the Pass travelling north, the A9 effectively runs along boundary of the SSSI site.

Detailed local environmental survey and assessment will be required to inform A9 dualling route alignment studies through the Drumochter Hills site, to ensure that the overall footprint width is minimised and that SSSI features are identified and avoided wherever possible.

This will likely influence the placement of lay bys, as the minimisation of the dualled width may lead to lay bys being located outwith the SSSI boundaries. Local level consultation with SNH will be required to ensure that SSSI features are avoided through design. Where it is not possible

to avoid all features, consultation with SNH will be required to determine appropriate mitigation measures.

SEA recommends that dualling proposals through this area take into account the entire breadth of the SSSI site, to ensure that design is consistent through the site and that construction works do not have start/ end points within the site boundaries.

The issues around the River Spey – Insh Marshes SSSI site in Section E are principally the same as those discussed under the Natura and Ramsar section for this area. SEA makes the assumption that strategic level Appropriate Assessment, and consultation with SNH, will develop guidance for later design stage considerations to minimise adverse effects on this SSSI.

The boundaries of both the Alvie and Craigellachie SSSI sites in Section E are in close proximity to the existing A9 (around 5m and 15m respectively, at the closest points). The majority of the Craigellachie site is at a higher elevation than the A9, as the road wraps around the hillside, and the area between the site and built features on the opposite side of the A9 (e.g. the B9152 and hotels and caravan parks around Aviemore) is narrow, closing to 40-50m at the some points. However, as discussed under the Craigellachie NNR section, SEA considers that there is sufficient clearance to avoid encroaching on the SSSI site.

The Alvie SSSI site consists of Loch Alvie, oak woodland and marshy swampland. Although the site boundary is only around 5m away from the current A9 at the closest point, the area to the opposite side of the carriageway, is not constrained by other built features. SEA considers that the Alvie SSSI site can be avoided by dualling to the opposite side of the existing carriageway.

Should more detailed route alignment studies identify local constraints that prevent avoidance of SSSI site boundaries, local level survey and consultation with SNH will be required to determine appropriate mitigation measures.

Key Findings:

SEA considers that, in terms of Biodiversity, Flora and Fauna (Biological SSSI sites), the majority of SSSI sites within the 200m online corridor are avoidable via route alignment studies, either by widening to the opposite side of the carriageway, or minimising the dualling footprint in the narrower area around Craigellachie, which would result in **no significant adverse effects**.

Should route alignment studies prove unable to avoid encroaching on the Craigellachie site, in Section E, any land take should be minimised and would require consultation with SNH to determine appropriate mitigation measures.

Land take from the SSSI would be minimal; however, as it would represent permanent loss within a national site, it could present potentially **major adverse effects at the site level,** depending on the sensitivity of the habitats/ species affected.

Similarly, the online corridor option in Section B presents the potential for **major adverse effects at the site level** on the Aldclune and Inverack Meadows SSSI, should the preferred route alignment encroach upon, and require land take from within the site.

Near offline Option B5 could be preferable to the online corridor at this location, as this would avoid encroaching on the SSSI.

Strategic mitigation measures developed under the strategic Appropriate Assessment for the Tulach Hill, Drumochter Hills and Insh Marshes Natura and Ramsar designations will be designed to result in no LSE for the qualifying interest features of the Natura designations. SEA will ensure that corresponding features of the SSSI designations on these sites are equally considered.

Given that the Drumochter Hills SSSI has different boundaries than the SAC/ SPA designations, there remains some risk of potentially **major adverse effects at the site level.**

Detailed local environmental survey and assessment will be required to inform A9 dualling route alignment studies through the Drumochter Hills SSSI site, to ensure that the overall footprint width is minimised, that SSSI features are identified and avoided wherever possible, and that effective site level mitigation is agreed with SNH.

This would likely reduce the risk of residual environmental effects to **moderate or minor adverse effects** at the site level.

5.6.6 High Level Consideration of Key Species

At the Scoping stage, the SEA stated that:

> *The A9 corridor contains a significant number of protected and rare flora and fauna; however, at the programme level, the SEA will not identify the range/ locations of any particular species... …the SEA will not conduct or require species or habitat surveys... …project level design and environmental assessment stages will require local habitat and species surveys.*

However, Scoping stage feedback from SNH advised that the SEA should consider identifying potential hotspots for three key species:

- Otter (*Lutra lutra*);
- Red squirrel (*Sciurus vulgaris*); and
- Wildcat (*Felis sylvestris*).

The National Biodiversity Network (NBN) provided a series of GIS data layers for each of the three species noted, identifying recorded areas of activity in 1km and 100 metre squares, depending on the resolution of data available for each species, as shown in Figure 5-6.

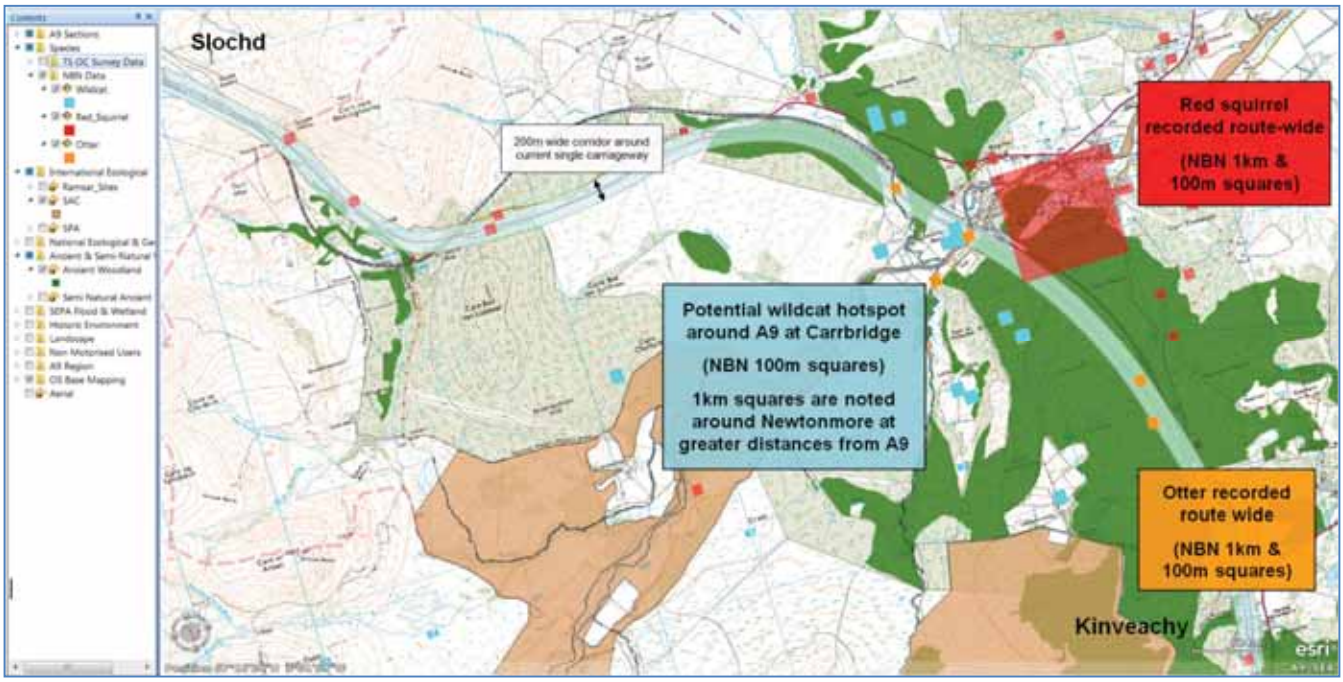

Figure 5-6 Example GIS Image – NBN Species Data – A9 Section F, Kinveachy to Slochd

The general consideration for each of these key species is the likely effect A9 dualling could have on habitat loss or fragmentation, and species movement across the road, i.e. whether dualling will present additional barrier effects and mortality risks.

The table below summarises the findings from analysis of the NBN GIS data, information on road kill incidents obtained from Transport Scotland's A9 operating company (Scotland Transerv), as well as the outputs of a detailed wildcat survey and research report, undertaken by the Cairngorms National Park Authority.

Table 5.38 Baseline GIS – Key Species – National Biodiversity Network Data

Key Species	# of National Biodiversity Network activity areas (1km/ 100m square areas) recorded for each species within 200m corridor sections					
	Section A	Section B	Section C	Section D	Section E	Section F
Otter (*lutra lutra*)	**49**	**5**	**8**	**1**	**8**	**11**
	Found route wide with potential hotspots noted around Bankfoot, Kindallachan, Dalnaspidal, Drumochter, Glen Garry, Kingussie, Kincraig, Insh Marshes, Dalmagarry, Daviot, Tomatin. 11 recorded road kill incidents with possible hotspot around Carrbridge (3 records).					
Red Squirrel (*sciurus vulgaris*)	**50**	**131**	**28**	**1**	**74**	**36**
	Found route wide but with less activity noted around the less wooded areas of Glen Garry, Pass of Drumochter, Glen Truim and Slochd-Tomatin. 7 recorded road kill incidents around wooded areas, no particular hotspot identified.					
Wildcat (*felis silvestris*)	No records of activity identified within 200m					**3**
	Areas of activity recorded around Carrbridge, east of Aviemore, west of the A9 around the Highland Wildlife Park, west of Newtonmore and around the Dunkeld-Blairgowrie Lochs. Possible activity hotspot around A9 at Carrbridge (NBN). No instances of wildcat road kill recorded by A9 Operating Company. The CNPA wildcat project report records one potential wildcat road kill near Dalwhinnie in 2012, with 3 further possible wildcat road kills between 1999 and 2010 (no locations identified). The CNPA project report identifies potential activity hotspots around Pitagowan and Carrbridge.					

Otter

Otters are found throughout the route, in relatively high numbers. Otters are less likely to be adversely affected by A9 dualling, provided adequate mitigation is in place in the vicinity of watercourses.

A9 dualling will require river crossings and other works in the vicinity of watercourses, requiring local level otter surveys and effective mitigation. Surveys will be undertaken in accordance with DMRB and best practice, and it is expected that otter management plans (or similar), detailing relevant mitigation measures, will be required at the project level in some cases.

SEA considers that A9 dualling presents opportunities for enhancement for otters, in terms of improved drainage provisions and SUDS with the potential to include appropriately designed otter passes through the road structure.

Red Squirrel

As noted under the Ancient Woodland section, adverse effects for red squirrel are related to boundary widening to accommodate a dualled route, leading to widened edge clearance between woodlands on opposite sides of the road.

Squirrels can cross the route at ground level, but are not as likely to use tunnels/ pipes through the road structure; therefore widening the route through woodland areas is likely to present minor adverse barrier effects for red squirrel, at the local level. Options that cut through and lead to new fragmentation of/ within woodlands would be considered as presenting major adverse impacts at the local level.

Red squirrel issues should not affect the strategic A9 programme; however, they should be included in local level survey to inform route alignment studies. It is expected that red squirrel management plans (or similar), detailing relevant mitigation measures, will be required at the project level in some cases.

Wildcat

Wildcat are known to be present along the route; however, SNH and CNPA acknowledge that the species is difficult to survey. NBN and CNPA data indicate potential activity hotspots around Pitagowan and Carrbridge, and SEA recommends that any A9 dualling surveys in these areas includes wildcat.

Surveys will be undertaken in accordance with DMRB and best practice, and it is expected that wildcat management plans (or similar), detailing relevant mitigation measures, will be required at the project level in some cases.

Wildcat will cross the road surface and widening of the route may increase the potential barrier that the A9 represents. The dualling is likely to increase the number of crossings under the road structure, via pedestrian subways, grade separated junctions, road, rail and water crossings and, when considered cumulatively with a general principle on improving permeability through the route via appropriately designed mammal tunnels/ passes, SEA considers that dualling has the potential to present minor benefits for wildcat.

Other Species

SNH advised the consideration of the Deer Vehicle Collisions (DVC) report, discussed earlier, and available road kill data to determine whether hotspots or specific recommendations for other species could be identified. Under the HRA Screening exercise, information was also obtained on capercaillie distribution.

Table 5.39 Additional Species Information

Other Species	
Badger	Operating company road kill data indicates that badger are found route wide and are the most commonly recorded species on the road kill records 16 road kill records – 13 of which are across Sections E and F
Capercaillie	Qualifying interests for Kinveachy Forest SPA west of the A9, and Craigmore Wood, Anagach Woods, Abernethy Forest and Cairngorms SPAs east of the A9. Both Abernethy Forest and Cairngorms SPAs are, in places, less than 5km from Kinveachy Forest SPA and capercaillie may travel between locations across the A9.
Deer	Found route wide with associated risk of accidents with vehicles, potential accident hotspots reported around Dunkeld-Birnam, Blair Atholl and the Moy-Tomatin-Craggie sections.

Badger

Badgers are known to be present along the route, and A9 dualling has the potential to present both locally adverse and beneficial effects. Where badger setts are located within dualling footprint boundaries, these may have to be relocated; however, where dualling improves permeability through the route it has the potential for benefits.

Badgers may be less likely than otters to use drainage tunnels/ culverts; however, appropriately designed mammal passes, located above flood water height where required, may be beneficial.

It is expected that local level badger surveys will be undertaken in accordance with DMRB and best practice, and that badger management plans (or similar), detailing relevant mitigation measures, will be required at the project level in some cases.

Capercaillie

Data provided to support the HRA Screening indicates that capercaillie are more susceptible to collision risks with deer fencing than road kill. HRA Screening found that a widened road may

present some additional barrier effect on capercaillie movement across the route, recommending that A9 dualling in the vicinity of the Kinveachy Forest SAC/ SSSI site (roughly from Aviemore to Carrbridge) consider minimisation of the dualled width.

Deer

Deer crossings and fencing issues are discussed in Section 5.2.8.

Bats

Various species of bats will be present along the route, using the area for foraging and roosting in appropriate trees and other sites. It is expected that local level bat surveys will be undertaken in accordance with DMRB and best practice, especially in areas where woodland will be affected by dualling, and that bat management plans (or similar), detailing relevant mitigation measures, will be required at the project level in some cases.

Fish

The route will cross a number of watercourses that support brown trout and brook lamprey populations; species that undertake limited migration within a watercourse. There is a risk that culverts or crossings that do not take proper account of these species could potentially isolate them from spawning grounds or other components of the population in a watercourse. In order to avoid such adverse effects, culverts and crossings should be designed allow free passage of fish species. This is not a strategic issue that would affect the A9 programme; however, it is an important issue for future, project level design.

Other

Other important species, including freshwater pearl mussel, pine marten, water vole, black grouse and other birds, reptiles, amphibians, lower plant species, fungi, lichens and invertebrates are known to be present along the route. Some upland, peat and wetland habitat will be more susceptible to adverse impacts, in terms of soil sealing and potential effects on hydrology.

SEA considers that local level ecological surveys, environmental and geotechnical assessment, undertaken in accordance with DRMB and best practice, will inform route alignment studies to avoid and minimise potential adverse effects. Further survey will be required at the preferred route alignment detailed design stage; and it is expected that detailed management plans including appropriate mitigation measures, working method statements, and achievable restoration plans will be required for approval by SNH at the project level.

Key Findings:

SEA considers that, in terms of Biodiversity, Flora and Fauna (Species), A9 dualling will present **minor adverse effects** at the local level, in terms of the potential for woodland edge clearance and associated habitat loss and barrier effects.

Dualling could equally provide **locally minor beneficial effects** by improving permeability through the route for species.

Local ecology surveys at later design stages will inform locally appropriate mitigation and species management plans.

5.6.7 Strategic Considerations – Biodiversity, Flora and Fauna

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Biodiversity.

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.40 SEA Strategic Considerations – Biodiversity, Flora and Fauna

A9 dualling should…	
1.	Avoid, as far as practicable, adverse effects on protected sites, habitats and species of conservation importance through local ecology survey and specialist advice
2.	Where avoidance is not possible, minimise the footprint required
3.	Embed the principle of route permeability in design specifications, to reduce potential barrier effects on the movement species
4.	Adopt the principle of a biodiversity balance, to offset any reduction in high value habitat (temporary or permanent) by providing for the creation of an equal or greater amount of habitat
5.	Restrict woodland edge clearance as far as practicable
6.	Include woodland edge effects in the calculation of compensatory habitat requirements
7.	Consider verge measures that reduce the attractiveness of the roadside to species
8.	Avoid tree planting on road side verges to limit opportunities for shelter
9.	Develop species management/ protection plans in consultation with SNH
10.	Avoid encouraging the spread of Invasive Non-Native Species
11.	Work with SNH and CNPA to develop strategic design guidance/ code of practice
12.	Schedule construction activities such that they reduce disturbance on species during sensitive periods, e.g. breeding seasons
13.	Minimise light spillage
14.	Avoid the use of deer fencing unless required by local specialist advice

5.7 Soil

A9 dualling presents a number of challenges and opportunities with respect to soil considerations. Challenges include delivering a safe, dualled route with appropriately sited junctions, lay-bys and SUDS whilst minimising overall land-take, soil sealing and construction/ excavation in peat areas, as well as protecting designated geological sites.

The strategic programme issues relate more to consideration of corridor options in/ around designated geological sites and peat areas, as well as developing and embedding strategic principles on rock cuttings to support landscape/ visual aspirations.

Soil itself is not a protected feature; however it does underpin many ecological functions and environmental services. The key soil issues therefore relate to:

- avoiding and limiting loss of valuable soils to hard standing (soil sealing);
- avoiding and minimising peat excavations and spoil;
- maintaining the integrity of peat ecological and hydrological regimes;
- maximising efficiencies and re-use through landscaping and cut and fill balancing; and
- sympathetic consideration of cuttings in terms of landscape and access to geological features/ interpretation opportunities.

5.7.1 Estimate of Total Area of Soils Potentially Affected

Although this SEA is focusing on the route-wide issues and constraints within 200m wide corridor options; in terms of the overall scale of potential effects on soil resources, a simple calculation would be based on DMRB guidance on the typical cross-section required for a D2AP dual carriageway, as presented in Figure 5-7 below:

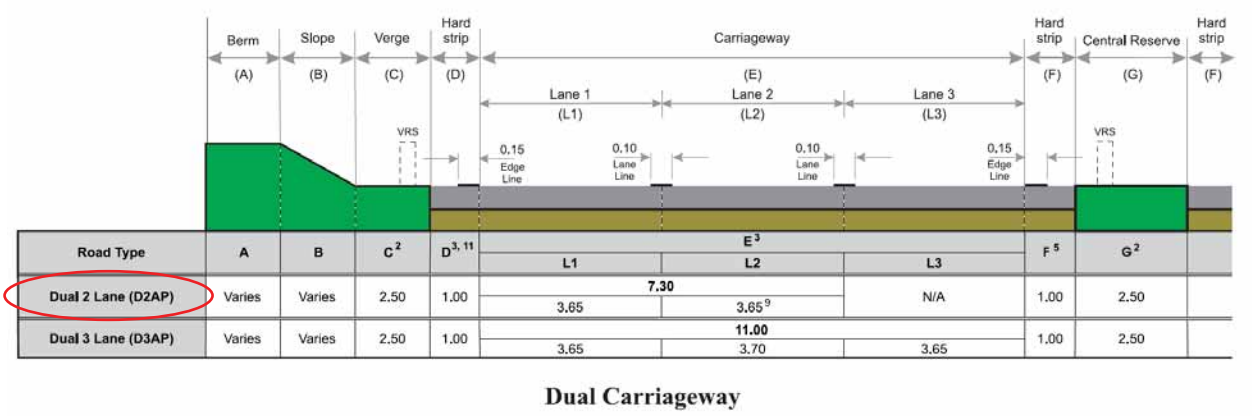

Figure 5-7 Highway Cross Sections (Source: DMRB Vol.6, Sect.1, TD27/05)

Assuming the existing A9 carriageway is retained wherever possible; an additional 2-lane carriageway alongside the existing road would be expected to be around 15m wide. Factoring in additional width for earthworks, utilities, drainage and laybys, a reasonable SEA assumption would be a total cross section width of 30m along the entire route.

If the length of current single carriageway sections is accepted as being around 129km, the total surface area of soils potentially affected would equal 129km length x 30m width, resulting in a total surface area of 387,000 sqm, or 3.87 sqkm.

The area covered by hard standing, in terms of the road surface, could potentially be in the order of 1.5 to 2sqkm (it should be recognised that this is an extreme estimate). To provide some context, the Olympic Park development in London covered approximately 2.4 sqkm.

As hard standing effectively sterilises the area underneath in terms of soil biodiversity, SEA considers that A9 dualling will present minor to moderate adverse effects at the local level, depending on the habitat or ecological value of local soils affected within each section.

It is accepted that this is an unavoidable effect of dualling; however, quantifying a high level estimate does lend support to the original SEA Scoping stage assessment that alternative or near offline routes would present greater environmental impacts than online dualling. Soil losses to hard standing would be even greater under routes that require full dual carriageway construction, rather than widening the existing route.

When considered at the route wide scale, a 2sqkm linear development over a range of soil types, terrain and topographies is assessed as presenting minor adverse impacts on soil resources.

Detailed route alignment studies and environmental assessment should work to minimise the overall area of land take required for dualling, focusing particularly on avoiding and limiting effects on higher value soils such as peat and productive agricultural land.

5.7.2 Peat Soils

SEPA and SNH feedback at the SEA Scoping stage indicated that one of their key concerns relating to soils would be the potential impact of A9 dualling on peat soils in the corridor area.

Soil mapping information was sourced from the James Hutton Institute (JHI) and processed via GIS analyses on three principal classes of peat soil descriptions. Where JHI data defined 'peat' as a specific feature/ class, these have been assumed to be determined on the basis of thickness of organic layer, with specific habitat, hydrology and carbon properties.

Peaty soils have been derived where JHI data defined 'peaty gleys' or 'peaty podzols', and these have been assumed to represent soils with a significant organic horizon.

Given the distinction made between peat and peaty soils, it should be noted that no areas of peat were identified in Sections A, B, D or E, and no peaty soils were identified in Sections A or B.

Table 5.41 Baseline GIS – JHI Institute Soils Mapping – Peat

A9 Section	Soil Type	Description	Feature Area (m2)	Corridor Area (m2)	NEAR_ DIST	% Feature Area
Section C	Peat	Peat with peaty gleys with peaty podzols	9,545,612	1,488	85	0.02%
Section F	Peat	Basin with valley peats	806,160	187,012	0.00	23%
			2,817,625	151,829	0.00	5%
		Peat with peaty gleys with peaty podzols	3,964,590	279,889	0.00	7%
Total area of peat identified in Section F			7,588,374	618,730		

The area of peat identified in Section C is in the Drumochter Pass and, given the distance from the A9 centre line to the nearest point of the area identified (approx. 85m); direct impacts on this area of peat should be avoidable via route alignment studies. Local level ecology and hydrology survey will be required to determine whether indirect effects are likely.

GIS indicates three areas of peat in Section F with a near distance of zero, indicating that the current A9 crosses these peat soil areas. The two areas highlighted in orange are around already

dualled sections, and considered less likely to be affected. The 200m corridor around the single carriageway section around Slochd covers approx. 5% of the identified area of peat.

The strategic mitigation recommendation would be for route alignment studies in Section F to determine whether an alternative routing is possible, outwith the 200m wide corridor, in order to avoid direct impacts on this area of peat soils around Slochd; however given the local topography, this is unlikely.

The specific area of peat is also surrounded by areas identified as peaty soils. Where avoidance is not possible, local mitigation to minimise potential impacts will have to be considered, through more detailed ecological, geotechnical and hydrology assessment, in consultation with SEPA and SNH.

Table 5.42 Baseline GIS – JHI Institute Soils Mapping – Peaty Soils

A9 Section	Soil Type	Description	Feature Area (m2)	Corridor Area (m2)	NEAR _DIST	% Feature Area
Section C	Peaty podzols	Peaty podzols: humus-iron podzols with peat	701,392	61,966	0.00	9%
Section C	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	1,625,447	59,372	0.00	4%
Section C	Peaty podzols	Peaty podzols: humus-iron podzols with peaty gleys with peat	1,627,282	126,403	0.00	8%
Section C	Peaty podzols	Peaty podzols with peat with peaty gleys	21,866,178	1,875,401	0.00	9%
Section C	Peaty podzols	Peaty podzols: humus-iron podzols with peat	8,126,830	1,252,471	0.00	15%
		Total area of peaty soils considered above	33,947,128	3,375,613		
GIS identifies five areas of peaty podzols in Section C with a near distance of zero, indicating that the current A9 crosses these peaty soil areas. The areas highlighted in orange are around the already dualled sections in Glen Garry, and are considered less likely to be affected. The 200m corridor around the single carriageway section through the Drumochter Pass covers approx. 15% of the identified area of peaty soils. Due to the constrained nature of the Pass, excavation in these soils is considered unavoidable.						
Section C	Peaty podzols	Peaty podzols: humus-iron podzols with peaty gleys with peat	7,622,606	20,446	34	0.3%
Section C	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	617,754	868	93	0.1%
		Total area of peaty soils considered above	8,240,360	21,314		
These areas of peaty soils, identified at a greater distance from, and not crossed by, the current A9, are also within the Drumochter Pass.						
Section D	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	566,823	57,324	0.00	10%
Section D	Peaty podzols	Peaty podzols with peat with peaty gleys	1,182,430	326,032	0.00	28%
Section D	Peaty podzols	Peaty podzols: humus-iron podzols with peat	4,544,117	317,208	0.00	7%
Section D	Peaty podzols	Peaty podzols: humus-iron podzols with peat	8,126,830	538,745	0.00	7%
		Total area of peaty soils considered above	14,420,200	1,239,309		9%
GIS identifies four areas of peaty podzols in Section D with a near distance of zero, indicating that the current A9 crosses these peaty soil areas on the exit from the Drumochter Pass and into Glen Truim. The surface area of the 200m wide corridor crossing the identified peaty soils features is just under 9% of the total surface area of these particular features. Due to the local topography, excavation in these soils is considered unavoidable.						
Section D	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	1,573,024	17,338	48	1%

A9 Section	Soil Type	Description	Feature Area (m2)	Corridor Area (m2)	NEAR _DIST	% Feature Area
Section D	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	10,038,898	6,425	77	0.06%
Total area of peaty soils considered above			11,611,922	23,763		0.2%
The area highlighted in orange above is around the already dualled stretch in Section D and is considered less likely to be affected. The other area identified is over 45m from the current route, but could still be affected. The main issue in Section D is that peaty soils run alongside the majority of the route length.						
Section E	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	4,023,439	215,117	0.00	5%
This area of peaty podzols in Section E is at the start of the section on the exit from the dual carriageway at Crubenmore. It is not considered avoidable, and some excavation in these soils will be required.						
Section E	Peaty gleys	Peaty gleys with peat: peaty podzols with peaty rankers	3,495,079	15,674	45	0.5%
This area of peaty gleys in Section E, is just to the northwest of Aviemore and could potentially be avoidable via route alignment studies.						
Section F	Peaty gleys	Peaty gleys with peat: peaty podzols	2,879,102	291,245	0.00	10%
This area of peaty gleys is around the already dualled section on the approach to Inverness and is considered unlikely to be affected further.						
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys with humus-iron podzols	1,965,538	261,882	0.00	13%
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys with humus-iron podzols	24,962,671.2	506,857	0.00	2%
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys with humus-iron podzols	1,824,918	251,355	0.00	14%
Section F	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	4,370,011	211,383	0.00	5%
Section F	Peaty podzols	Peaty podzols: humus-iron podzols with peat	5,297,014	757,728	0.00	14%
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys with humus-iron podzols	7,281,445.5	635,528	0.00	9%
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys with humus-iron podzols	16,974,771.5	133,744	0.00	0.8%
Section F	Peaty podzols	Peaty podzols with humus-iron podzols: peaty gleys with rankers	3,399,233	17,080	3	0.5%
Total area of peaty soils considered above			66,113,353.61	2,775,588		4%
GIS identifies seven areas of peaty podzols in Section F with a near distance of zero and one with a near distance of 3m, indicating that the current A9 crosses these eight peaty soil areas. Two of the areas are around the dual carriageway section at Slochd and are considered less likely to be affected. The remaining areas are along the single carriageway stretches and are considered unavoidable given the local topography.						
Section F	Peaty podzols	Peaty podzols with peat: peaty gleys	5,575,425	29	96	0.001%
Section F	Peaty podzols	Peaty podzols: humus-iron podzols with peat	4,259,137	3,061	63	0.07%
Total area of peaty soils considered above			9,834,562	3,097		0.03%
The area highlighted in orange above is around an already dualled section and considered unlikely to be affected. The area noted at over 60m from the current A9 may be avoidable; however one of the main issues in Section F is that the local topography means that the single carriageway sections are surrounded by peaty soils.						

In summary, the key areas of peat and peaty soils that will be affected by A9 dualling are in Section C – Drumochter Pass, Section D – Glen Truim, Section E – just past the Crubenmore dual carriageway (relatively small area) and Section F – remaining length of the route north of Carrbridge.

Following the SEA Scoping stage, SEPA provided access to the national Wetland Inventory dataset, which includes a 'peat bog' category. GIS analysis of this category is presented below.

Table 5.43 Baseline GIS – Wetland Inventory – Peat Bog

A9 Section	Site Name	Feature Area (m2)	Corridor Area (m2)	NEAR_DIST	% Feature Area
Section C	Drumochter Hills	16,102	6,475	34	40%
Section C	Drumochter Hills	11,731	5,656	52	48%
Section C	Drumochter Hills	992,188	2,721	80	0.3%
Section C	Drumochter Hills	182,623	5,369	85	3%
Section D	Drumochter Hills	992,188	15,162	78	2%
Section F	n/a – already dualled	8,689	4,070	12	47%
Section F	n/a – already dualled	6,644	5,112	38	77%
Each of the Wetland Inventory peat bog areas identified in Sections C and D lie within the Drumochter Hills designated SSSI and SAC site boundaries, at distances of 34 – 85m from the current route. Route alignment studies within the Drumochter Hills site will need to focus on minimising the overall width of the dualled route footprint to avoid encroaching on these peat bog features, as well as other designated features.					

Effective mitigation and restoration plans for peat and upland habitats will be required prior to construction. Issues related to excavation include altered drainage leading to desiccation beyond the excavated area, temporary storage and reinstatement of peat excavations and the potential effects on carbon releases from peat soils associated with altered drainage and desiccation. Issues related to construction in these areas include introduction of structures affecting the hydrological regime, stability of substructures and foundations, and the use of excavated peat within cut/ fill/ landscaping.

Management and disposal of peat can be problematic and the avoidance of peat waste generation, wherever possible, should be included as an overarching principle. The generation of surplus peat needs to be addressed from the outset given the limited scope for re-use. SEPA consider disposal of significant depth of peat as landfilled waste, which may not be consentable under their regulatory regimes.

Route alignment studies and more detailed environmental assessment should work to identify any areas of active blanket bog (priority habitat) that this SEA has not identified. Early discussion with SEPA and SNH on proposals is essential. Where borrow pits are proposed, SEPA will require information regarding their location, size and nature including the depth of the borrow pit floor and the final reinstated profile.

Key Findings:

SEA considers that, in terms of Soil (Peat), online dualling presents the potential for **major adverse effects** in Sections C, D and F, and **minor adverse effects** in Section E.

The area through the Drumochter Pass will be particularly challenging given the constrained nature of the valley floor, and should dualling impact areas of active blanket bog, then a **major adverse effect at the site level** would be determined due to the priority nature of this habitat.

Local level peat ecology, hydrology and geotechnical survey will be required to determine locally appropriate solutions which minimise the potential effects of drainage and desiccation, and inform suitable restoration and management plans.

5.7.3 Agricultural Land

Prime quality agricultural land is considered a finite resource, and general guidance would be to avoid losses wherever possible. The GIS analysis below shows that prime quality, arable land (LCA Grade 2-3.1) is found within the 200m corridor in Sections A and F.

In Section F, this prime quality land is around an already dualled section and is unlikely to be affected. In Section A, there is a much larger area of this high quality land, bordering the A9 in some parts. Dualling therefore has the potential to result in some, but anticipated to be minimal, loss in Section A.

Slightly lower quality (not prime) LCA Grade 3.2-4.2, mixed agricultural land is found bordering the A9 within 200m corridors in all sections except Section D. There are therefore likely to be minor losses in Sections A, B, C, E and F; however overall losses generally associated with boundary widening for online dualling are likely to be minimal at the route wide scale.

Table 5.44 Baseline GIS – High Quality Agricultural Land

A9 Section	High Quality Agricultural Land within 200m	Feature Area (m2)	% within 200m corridor around single carriageways
Section A	Arable (Grade 2 - 3.1)	79,296,122	0.4%
	Mixed (Grade 3.2 – 4.2)	73,136,454	3.7%
Section B	Arable	0	0
	Mixed	35,595,604	10.6%
Section C	Arable	0	0
	Mixed	6,897,344	1.7%
Section D	Arable	0	0
	Mixed	0	0
Section E	Arable	0	0
	Mixed	45,133,170	9.5%
Section F	Arable	721,905	0
	Mixed	66,119,287	2.8%
Route wide total arable land within 200m		**80,018,027**	**0.4%**
Route wide total mixed agriculture land within 200m		**226,881,859**	**5.6%**

Key Findings:

SEA considers that, in terms of Soil (Agricultural Land), online dualling will result in **minor adverse effects** on prime quality land (Grade 2-3.1) in Section A, and **minor adverse effects** on mixed agricultural land (Grade 3.2-4.2) across all sections, other than Section D where no such land is identified.

At the route wide level, potential losses of productive agricultural land are considered to present a **cumulative minor adverse effect** as the overall scale of losses is expected to be low.

5.7.1 Geological Conservation Review (GCR) Sites

The Joint Nature Conservation Committee (JNCC) maintains the GCR database on the UK's best geological and geomorphological earth science sites. Sites on the GCR database are considered to provide a benchmark for quality, representing the highlights of British geology.

Although GCR is a non-statutory designation, they are considered to be the best examples of their type, scientifically equivalent to, and used to underpin, Geological SSSI designations. It must be noted that GCR and geological SSSI designations do not apply to soils; however, soil conservation is considered intrinsically important to the SSSI conservation system.

With respect to A9 dualling, no GCR sites are identified within the 200m corridor in Sections A, B or E. Two GCR sites in Sections D and F are around already dualled sections, and are considered unlikely to be affected. Therefore, around 1% of the route wide online corridor crosses GCR site boundaries along single carriageway sections, in terms of total surface area, as noted below.

Table 5.45 Baseline GIS – Geological Conservation Review (GCR) Sites

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	% of A9 Section	% of Total Corridor
Section C	A9 Cuttings and River Garry GCR #2692	363,004	This part of the A9 Cuttings and River Garry GCR site is along an already dualled section – no issue			
Section C	A9 Cuttings and River Garry GCR #2692	363,563	314,454	86%	5%	1%
Section D	Loch Etteridge GCR #2103	1,140,670	The A9 is already dualled around the Loch Etteridge GCR – no issue			
Section F	Littlemill Fluvio-glacial Landforms GCR #378	168,838	The A9 is already dualled around the Littlemill GCR – no issue			
Section F	The Slochd GCR #3318	1,111,022	82,944	8%	1%	0.2%

In Section C, approximately 86% of the area designated as the A9 Cuttings and River Garry GCR site, that lies outwith the current dualled section, surrounds the A9. This represents around 5% of that corridor section. Route alignment options through this area will need to be discussed with JNCC and SNH to determine the best solution, as although the GCR is not a statutory designation, the same area is also designated under the Glen Garry Geological SSSI designation, which would generally lead to a presumption of avoidance.

Dualling may open up other features of geological interest, and there may be opportunities for enhancement in the area, via lay by positioning and providing safe pedestrian subway access to both sides of the road.

In Section F, around 8% of the Slochd GCR area is covered by the 200m wide corridor, representing just over 1% of that corridor section. It should be noted that the Slochd GCR is in a different area and is a distinct feature from the Slochd SAC. It should also be noted that the Slochd GCR does not have a corresponding SSSI designation.

The Highland Mainline runs parallel to the west of the A9, through both the GCR site boundary and the 200m corridor, most likely limiting the area for widening to the opposite side of the carriageway at this location.

Again, dualling may open up other features of geological interest, and there may be opportunities for enhancement in the area, via lay by positioning and providing safe pedestrian subway access to both sides of the road.

5.7.2 Geological SSSI

A wide range of geological and geomorphological features are protected under Geological SSSI designations. SNH advise that for:

- Hard rock sites – partial or full removal, defacement or obscuring of any rock outcrop will generally be considered damaging.
- Relic landform sites (e.g. glacial landforms) – partial or full removal, or obscuring of any landform will generally be considered damaging.
- Active fluvial sites (e.g. river geomorphological sites) – any changes to relic or active river landforms, flow regime of sediment input, etc. is likely to be considered damaging.

The A9 runs through, or alongside, a small number of mixed and geological SSSI sites between Inverness and Perth. No sites have been identified along 200m corridors in Sections A, B or E. Two sites in Sections D and F are around already dualled stretches and are not expected to be affected further, as noted below.

Table 5.46 Baseline GIS – Geological SSSI & Mixed SSSI

A9 Section	Feature_NAME	Feature Area (m2)	Corridor Area (m2) in Feature	% of Feature	% of A9 Section	% of Total Corridor
Geological SSSI						
Section C	Glen Garry SSSI	123,339	This part of the Glen Garry SSSI is along an already dualled section of the route Approx 45% of the total SSSI area			
Section C	Glen Garry SSSI	148,438	112,929	76%	2%	0.3%
Section D	Loch Etteridge SSSI	1,149,292	The A9 is already dualled around the Loch Etteridge SSSI			
Section F	Littlemill Fluvio-glacial Landforms SSSI	165,654	The A9 is already dualled around the Littlemill SSSI			
Mixed SSSI						
Section C	Drumochter Hills SSSI	96,881,320	1,575,429.42	2%	27%	5%
Section D	Drumochter Hills SSSI		101,945.73	0.1%	4%	

In Section C, the A9 is already dualled through some of the Glen Garry SSSI, which comprises a number of distinct areas along the A9 route; however, approximately 76% of the remaining SSSI area lies within the 200m wide corridor around the single carriageway. This is principally the same area as the GCR area discussed previously.

The SSSI is designated for structural and metamorphic Dalradian geology (hard rock site), preserving evidence of the shallow water environment in which they were deposited as sediments over 600 million years ago.

This site creates a specific tension between general SSSI requirements to avoid impacts wherever possible, and the fact that the A9 dissects the site, exposing some of the features. SNH previous advice to other projects (e.g. BDL) was to ensure that no construction related activity takes place within the SSSI, or within 20m of its boundaries.

The general position that partial or full removal of any rock outcrop would present adverse impacts on the site's qualifying features is accepted; however, dualling may equally open up other features of geological interest, and there may be opportunities for enhancement in the area, via lay by positioning and providing safe pedestrian subway access to both sides of the road.

SEA therefore recommends early discussion and agreement with SNH, on a preferred approach to this particular SSSI site, to inform strategic design guidance. Should the decision be that no construction takes place within the site boundary, route alignment studies will have to consider alternative alignments outwith the 200m corridor in this area.

The Drumochter Hills Mixed SSSI is designated for fluvial (river) geomorphology. Both the Highland Mainline and the River Spey SAC run generally parallel to the west of the A9 through this SSSI site boundary and some parts of the 200m corridor in Sections C and D.

This is one of the many issues facing A9 dualling through the Drumochter Hills site. SEA therefore recommends early discussion and agreement with SNH, on a preferred approach to this particular SSSI site, to inform strategic design guidance. It is likely that this issue could be discussed under the workshop previously recommended to inform a strategic Appropriate Assessment for the Drumochter Hills SAC/ SPA designations.

Key Findings:

SEA considers that, in terms of Soil (GCR and Geological SSSI), A9 dualling presents potentially **mixed effects**, with risks of adverse impacts and opportunities for local enhancement.

Potential enhancement benefits could be realised around Glen Garry and Slochd; however, early agreement is required with SNH on the preferred approach to provide strategic guidance.

Geomorphological features in the Drumochter Hills SSSI site will require local survey to determine their location and avoidance and mitigation recommendations; however, the issues could be discussed under the developing work to provide a strategic level Appropriate Assessment for the Drumochter Hills SAC/ SPA designations.

5.7.3 Strategic Considerations – Soil

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Soil.

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.47 SEA Strategic Considerations – Soil

A9 dualling should…	
1.	Minimise the overall land take footprint and soil sealing associated with the preferred route
2.	Avoid and minimise losses of high value soils, including peat and productive agricultural land
3.	Minimise indirect impacts on off-site peat soils, limit effects on ecological and hydrological regimes
4.	Avoid, as far as possible, sites designated for their geological or geomorphological interest
5.	Incorporate opportunities for enhancement and access where dualling could expose geodiversity interest features
6.	Minimise the residual visual effects of cutting activity
7.	Maximise re-use of soils on site through landscaping and cut and fill balance

5.8 Water

A9 dualling presents a number of challenges and opportunities with respect to water environment considerations. Challenges include delivering infrastructure with increased drainage capacity to improve resilience to climate change, whilst minimising run off effects from road surfaces, and the avoidance of increased flood risk and important wetland areas.

Opportunities relate to the inclusion of Sustainable Drainage Systems (SUDS) to improve attenuation of road surface run off, improve discharge water quality from the route, and delivering ecological enhancement benefits.

5.8.1 Watercourse Crossings

The main rivers along the A9 corridor include the Tay, Tummel and Garry to the south of the Drumochter Pass, and the Spey, Findhorn and Dulnain to the north of Drumochter. Each has numerous tributaries, and GIS analysis of watercourse crossings indicates that there are at least 300 instances where the 200m wide online corridor crosses a watercourse. GIS also indicated that around 75 of these crossings are along already dualled sections.

Table 5.48 Baseline GIS – Indicative number of watercourse crossings

A9 Section	# Watercourse crossings within noted distance from A9 centre line			
	100m	50m	30m	15m
A	28	15	12	12
B	85	51	47	42
C	66	44	31	30
D	29	14	13	12
E	50	37	33	29
F	48	30	25	23
Total #	**306**	**191**	**161**	**148**

It should be noted that the total number of watercourse crossings required may actually be higher, as the analysis only considered those watercourses identified via SEPA and CEH mapping. Smaller watercourses, for example burns/ streams under 3m wide, might not be included and will need to be identified via local survey.

The Water Framework Directive, and the WEWS Act, contain objectives on preventing deterioration and improving the water environment, with guidance stating that development should be designed to avoid engineering activities such as culverts, bridges, watercourse diversions, bank modifications or dams unless there is no practicable alternative. The analysis above shows that the number of crossings required, in each Section, typically doubles between 15m and 100m from the current route. SEA therefore considers that, in all cases, online dualling will minimise the number of watercourse crossings, culverts and engineering works required.

SEPA have a policy against closed culverting of watercourses as bridging structures for transportation routes, and justification for the location of any proposed activity will be a key issue. SEPA require demonstration that every effort has been made to leave the water environment in its natural state, and to seek improvement opportunities, for example:

- upgrading of existing structures;
- realignment of straightened watercourses;
- removal of redundant weirs;
- creation of buffer strips and provision of fencing along watercourses.

Given that the principal watercourses around the A9 are also designated as Special Areas of Conservation (River Tay SAC, River Spey SAC, Insh Marshes SAC), SEA considers that additional watercourse crossings in locations significantly distinct from existing crossings could present additional risks, depending on local habitat, geomorphology and species present.

There is the potential that each and every crossing and culvert location will require a specific survey to inform project level Appropriate Assessment and potentially, a detailed Drainage and Flood Risk Assessment. The potential resource costs associated in terms of survey, assessment, consultee review, etc. could be significant; however, SEA recommends that a more strategic approach is considered in consultation with SEPA and SNH, to develop a risk based hierarchy and appropriate guidance for detailed assessment.

Due to the potential number of applications across the route, there would also be value in agreeing with SEPA a strategic approach to Controlled Activities Regulations (CAR) engineering and discharge licences (could equally apply to waste considerations).

5.8.2 Areas within the 200 year Indicative Flood Risk Map

GIS analysis indicates that there are 43 areas along the route where the 200m wide corridor crosses areas highlighted in SEPA's 200 year indicative flood risk map.

In terms of surface area, around 9% of the total route wide 200m wide corridor could be in the 200 year flood risk area (depending on local topography). The table below outlines the total surface area of the 200m wide corridor in each section that crosses indicative flood zone areas.

Table 5.49 Baseline GIS – 200yr Indicative Flood Risk Zone

A9 Section	% A9 Section in Flood Zone	Comment
Section A	9%	Potential flood risk issues around single carriageway sections between Luncarty to Pass of Birnam, and through Dunkeld
Section B	25%	As the route follows the Garry, Tummel and Tay, there are flood risk issues in a number of areas
Section C	5%	Issues around water crossings in Glen Garry
Section D	5%	Issues around water crossings in Glen Truim
Section E	5%	Flood risk issues around Kingussie, Insh Marshes and Alvie, typically around water crossings
Section F	2%	Some consideration required around Carrbridge; however, generally minor flood risk issues around water crossings in the rest of this section

It should be noted that the real area in the flood zone may be lower, as the mapping analysis did not take into account local topography, i.e. it was based on 2D rather than 3D mapping. Some water crossings (e.g. bridges) may be at much higher elevations, and the A9 may be on embankments in some areas, meaning that the road itself might not be affected by flooding in such areas. Dualling in such areas will still need to consider flood risks, particularly where embankments might have to be widened, potentially encroaching into the functional flood plain.

Where avoidance is not possible and dualling encroaches onto the floodplain, SEA recommends that the flood risk management principle outlined in DMRB (Vol 11 S3 P10 45/09) is adopted:

Transport infrastructure in the functional floodplain must be designed and constructed to:

(i) remain operational and safe for users in times of flood;

(ii) result in no loss of floodplain storage;

(iii) not impede water flows; and

(iv) not increase flood risk elsewhere.

5.8.3 Strategic Flood Risk Assessment (SFRA)

In their response to the SEA Scoping stage, SEPA advised that a route wide Strategic Flood Risk Assessment (SFRA) would be valuable in identifying key areas of flood risk and potential strategic avoidance and mitigation measures for future design stages. SEPA recommended that each section of the A9 should be assessed for flood risk, from all sources, in line with Scottish Planning Policy (Paragraphs 196-211).

In addition, CNPA Supplementary Guidance on Water Resources states that there will be a presumption against development which does not meet all of their criteria relating to flooding, as follows:

1) be free from significant risk of flooding;
2) does not increase the risk of flooding elsewhere;
3) does not add to the area of land that requires flood prevention measures; and
4) does not affect the ability of the functional floodplain to store or move flood waters.

A route-wide A9 dualling SFRA is now underway and will be continue through the SEA Environmental Report public consultation period. The SFRA will include relevant consultation with SEPA and other stakeholders, including local authorities and Scottish Water. SFRA findings and recommendations will be incorporated into the SEA Post Adoption Statement and finalised monitoring framework.

SFRA Overview

The A9 will be considered as a major trunk road, representing essential infrastructure within the SFRA. The route crosses some of the largest rivers in Scotland, including the three main river catchments of the Tay, Spey and Findhorn. Several large tributaries flow into these main watercourses, including the Tummel and Garry into the Tay and the Dulnain into the Spey.

Table 5.50 Main river catchments around the A9

Main River	Catchment size
Tay	4,714 km^2
Spey	1,485 km^2
Findhorn	418 km^2

The route crosses areas with known flood history and it is recognised that 'medium to high' flood risk areas[5] are unlikely to be completely avoided under the dualling programme. Therefore, A9 dualling in areas sensitive to flooding will be carefully considered; primarily to avoid increasing overall flood risk and areas of flood hazard. Figure 5-8 shows a GIS overlay of the A9, local settlements and the indicative flood risk map.

[5] Scottish Planning Policy currently defines 'medium to high risk' as an annual probability of flooding greater than 0.5% (1 in 200 year return period).

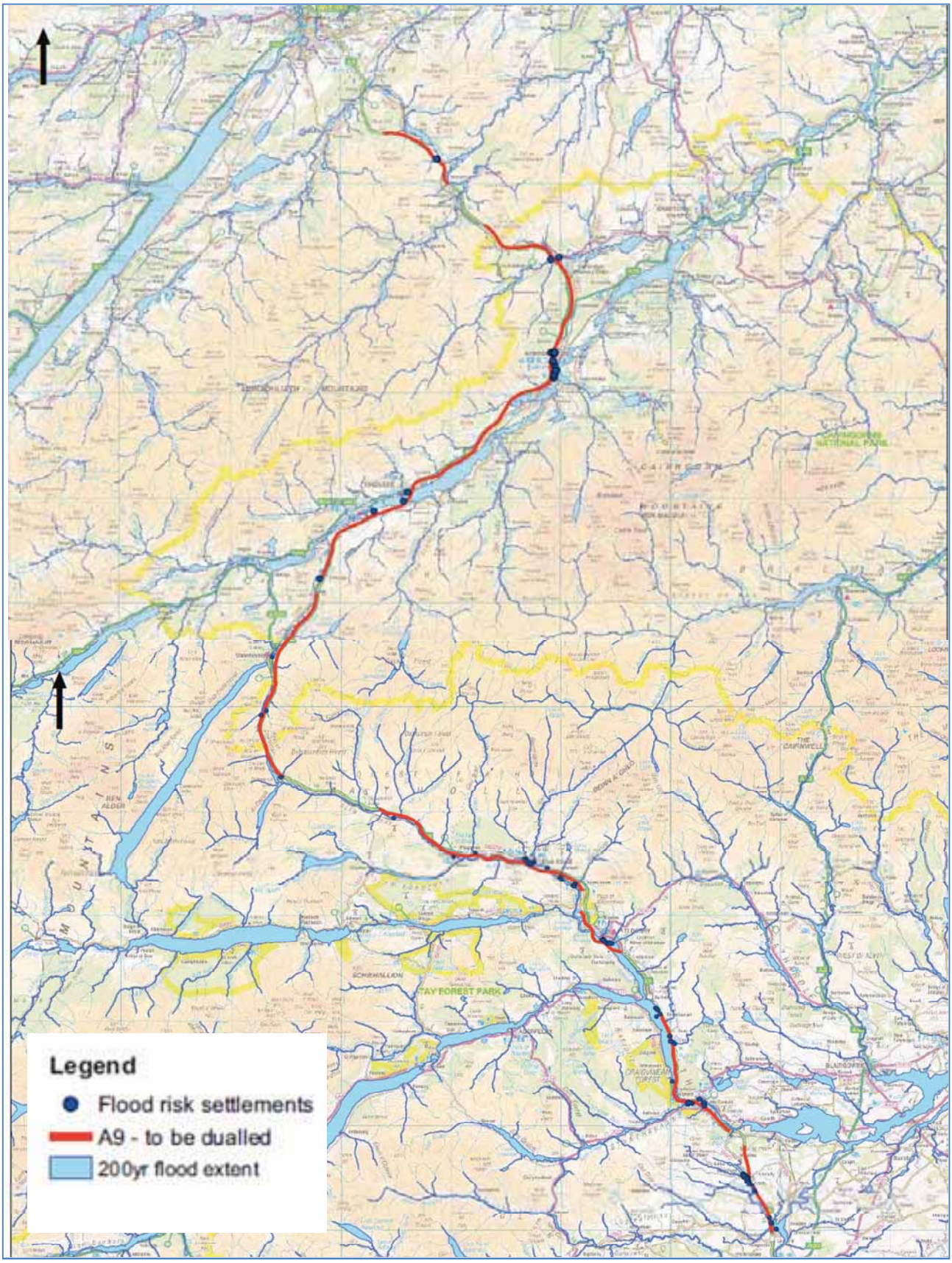

Figure 5-8 GIS image showing A9 sections and preliminary indicative flood risk areas

The SFRA aims to:

- Review available information, including topography, geology, SEPA flood maps;
- Identify areas sensitive to flooding (including areas within the functional floodplain);
- Consult with SEPA, Local Authorities, Scottish Water, Cairngorm Natural Park Authority and Historic Scotland to collate local flood history along the route;
- Assess potential constraints and take account of all potential sources of flooding.

Table 5.51 Likely sources of flooding around the A9

Flood Sources	Likely	Unlikely
River	✓	
Surface water	✓	
Groundwater		X
Coastal		X
Sewer		X
Infrastructure failure		X

Following preliminary SFRA Scoping, it was considered that A9 flooding from groundwater, coastal, sewer and infrastructure failure is unlikely. The SFRA will therefore focus on potential flooding from rivers and surface water.

Preliminary consultation with SEPA has agreed the following:

- Dualling will be designed in consideration of the 1 in 200 year return period flood event;
- Consideration should be given to flood risk during construction phases, including temporary works and guidance on the placement of non-essential equipment and storage of materials outwith the functional floodplain;
- Route alignment options that require the location of SUDS features within the functional floodplain will be required to demonstrate that there is no change in flood risk, and no impact to water quality.

Initial review has identified that the key risks associated with dualling include:

- New or widened embankments within the functional floodplain, potentially resulting in reduction of flood storage and increase in flood level;
- New watercourse crossings potentially limiting flow conveyance and resulting in flow backup, increase in flood level and wider flooding.

SFRA will therefore consider the following key issues:

- Will A9 dualling encroach on the functional floodplain?
- What is the source of flooding?
- Are properties at greater risk of flooding due to A9 dualling?
- What are the strategic options and guidance around areas of increased risk, to result in a final position of no net increase in flood risk?

As previously noted, SFRA findings and recommendations will be incorporated into the SEA Post Adoption Statement and finalised monitoring framework.

5.8.4 Wetland Areas

In their responses to SEA Scoping, SNH and SEPA noted their concerns on the potential for A9 dualling to impact peat soils (considered previously) and other wetland areas. Concerns related to ecological impact, and the potential for effects on hydrology that could lead to A9 works in one area affecting groundwater dependent wetlands in an area distinct from the works site.

Following SEA Scoping, SEPA provided access to their Wetland Inventory records, and the table below summarises the range of wetland types identified along the A9, and found within the 200m online corridor in each A9 section.

Table 5.52 Baseline GIS – Wetland Inventory Summary – All features

Wetland Type	% Route wide corridor crossing feature	% Corridor Section crossing wetland feature type						% identified feature area in 200m corridor
		A	B	C	D	E	F	
Fen	0.08%					0.4%		78%
Low Proportion of Wetland	0.06%		0.3%					31%
Marshy Grassland	0.3%					0.2%	1%	35%
Montane Grassland	0.2%		0.4%	0.2%	0.5%	0.3%		22%
Non-Specific Wetland	0.2%			1.1%		0.0003%		21%
Other Wet Woodland	0.1%		0.06%			0.5%	0.0001%	36%
Peat Bog	0.1%			0.4%	0.5%		0.1%	2%
Reed Bed	0.004%					0.02%		7%
Seepages/ flushes	0.02%					0.07%	0.04%	33%
Swamp	0.1%					0.5%	0.01%	50%
Wet Heath	0.5%			0.03%			2.3%	5%
Wet Woodland	0.04%		0.2%			0.03%		79%
Total %age	**1.8%**	**0**	**1%**	**2%**	**1%**	**2%**	**4%**	

No wetland feature areas were identified in Section A; however, there are areas of wetland to be considered in all other Sections; therefore, Table 5.53 provides a more detailed breakdown of each type of wetland feature in each of the remaining five A9 sections.

The table identifies those wetland areas which are around already dualled stretches (orange rows) and are therefore expected to be less likely to be affected. It also identifies those wetland areas that SEA considers to be at greater risk of direct adverse impacts. Wetland areas less than 50m from the current route are highlighted in purple, and those where over 40% of the wetland feature is within the 200m corridor are highlighted in yellow. These wetland areas will require detailed consideration during route alignment studies, to avoid where possible or to minimise the footprint where avoidance is not possible.

For all wetland areas potentially affected within a corridor, environmental assessment to support route alignment studies will need to identify groundwater dependent wetlands and demonstrate consideration of the feeding water source. SNH and SEPA should be consulted further to determine whether the National Vegetation Classification (NVC) database identifies those areas which are groundwater dependent, and the feeding water source.

Table 5.53 Baseline GIS – Wetland Inventory – All features

A9 Section	SAC Name	SPA Name	SSSI Name	WFD95SUB (Wetland Type)	Feature Area (m2)	Corridor Area (m2) in Feature	NEAR_DIST	% of Feature	% of A9 Section		% of Total Corridor	
Section B	River Tay	N/A	Aldclune and Invervack Meadows	Montane grassland	24,064.28	24,064.28	9	100.00%	0.34%	0.4%	0.07%	0.09%
					43,560.61	4,588.88	32	10.53%	0.07%		0.01%	
						1,649.51	77	3.79%	0.02%		0.005%	
				Other wet woodland	11,832.46	1,518.34	0.0	12.83%	0.02%	0.04%	0.004%	0.01%
					1,555.25	1,555.25	34	100.00%	0.02%		0.004%	
			Shingle Islands	Other wet woodland	16,531.02	1,465.00	81	8.86%	0.02%		0.004%	
	N/A		Pass of Killiecrankie	Low Proportion of Wetland	62,060.37	13,181.45	54	21.24%	0.2%		0.04%	
	N/A			Low Proportion of Wetland	8,448.24	8,413.38	30	99.59%	0.1%		0.02%	
				Wet Woodland	13,888.48	12,673.81	46	91.25%	0.2%		0.04%	
Based on previous discussion within this Report, SEA considers that Option B5 may provide an effective alternative to the online corridor, as it would be more likely to avoid further encroachment on the Aldclune and Inverack Meadows SSSI, thereby limiting the potential for effects on wetlands at this location. The other two areas of wetland (not around dualled sections) are within 50m and are almost fully within the 200m corridor; therefore, route alignment studies may have to consider alternatives outwith the 200m corridor to avoid these sites (within the context of other constraints). Where avoidance is not possible, local survey and assessment of feeding water sources should inform mitigation to minimise potential adverse effects and support detailed route alignment design.												
Section C	Drumochter Hills			Montane grassland	19,862.03	8,216.86	15	41.37%	0.14%	0.2%	0.02%	0.04%
					27,053.29	2,286.34	56	8.45%	0.04%		0.01%	
					101,576.76	3,296.48	85	3.25%	0.06%		0.01%	
				Non-Specific Wetland	94,703.19	27,456.93	21	28.99%	0.47%	1%	0.08%	0.2%
					30,945.68	4,096.84	41	13.24%	0.07%		0.01%	
					158,106.49	33,461.95	56	21.16%	0.58%		0.10%	
					1,940.04	1,100.82	77	56.74%	0.02%		0.003%	
				Peat Bog	16,101.59	6,475.29	34	40.22%	0.11%	0.4%	0.02%	0.06%
					11,731.07	5,655.70	52	48.21%	0.10%		0.02%	
					992,188.24	2,720.84	80	0.27%	0.05%		0.01%	
					182,623.43	5,368.57	85	2.94%	0.09%		0.02%	
				Wet heath	3,904.50	1,744.99	53	44.69%	0.03%		0.01%	
Section D	N/A		Drumochter Hills	Montane grassland	28,724.00	10,100.86	27	35.17%	0.36%	0.5%	0.03%	0.04%
	Drumochter Hills				29,354.50	4,851.61	79	16.53%	0.17%		0.01%	
				Peat Bog	992,188.24	15,161.76	78	1.53%	0.54%		0.04%	
Based on previous discussion within this Report, SEA considers that the route through the Drumochter Hills SAC/ SPA/ SSSI area will be one of the most complex areas for A9 dualling to minimise potential adverse effects. This is the only area, in Sections C and D, identified with wetland features, which will need to be considered in conjunction with peat soil issues discussed previously. Excavation and construction through this area cannot be avoided and the dualled footprint width will have to minimised through the Pass of Drumochter, with real consideration given to the viability of locating lay bys and other footprint widening features, including temporary works compound sites, outwith the designated site boundaries. As noted previously, the SAC and SPA boundaries themselves could be avoided, as there is a break along the valley floor; however, the SSSI designation encompasses the whole area. Detailed discussion with SNH to secure agreement on suitable strategic guidance will be required.												

A9 Section	SAC Name	SPA Name	SSSI Name	WFD95SUB (Wetland Type)	Feature Area (m2)	Corridor Area (m2) in Feature	NEAR_DIST	% of Feature	% of A9 Section		% of Total Corridor	
Section E	River Spey	N/A		Other wet woodland	64.93	64.93	67	100.00%	0.001%	0.02%	0.0002%	0.004%
					4,978.91	1,319.46	67	26.50%	0.02%		0.004%	
	Insh Marshes	River Spey - Insh Marshes		Fen	33,623.37	26,085.50	0.0	77.58%	0.38%		0.08%	
				Marshy grassland	33,967.89	2,649.12	34	7.80%	0.04%	0.08%	0.01%	0.02%
					29,369.66	1,491.54	73	5.08%	0.02%		0.004%	
					2,291.79	1,262.73	76	55.10%	0.02%		0.004%	
				Montane grassland	9,610.37	7,932.25	13	82.54%	0.12%	0.2%	0.02%	0.04%
					25,891.39	5,316.59	68	20.53%	0.08%		0.02%	
					343.83	343.83	68	100.00%	0.005%		0.001%	
					420.43	384.58	86	91.47%	0.01%		0.001%	
					14,042.57	209.80	88	1.49%	0.003%		0.001%	
					17,730.29	86.98	91	0.49%	0.001%		0.0003%	
				Non-Specific Wetland	31,695.91	17.34	93	0.05%	0.0003%		0.0001%	
				Other wet woodland	3,299.62	2,720.69	0.0	82.45%	0.04%	0.2%	0.01%	0.04%
					1,872.74	1,872.74	52	100.00%	0.03%		0.01%	
					42.39	42.39	71	100.00%	0.001%		0.0001%	
					2,334.59	2,088.55	72	89.46%	0.03%		0.01%	
					479.81	479.81	72	100.00%	0.01%		0.001%	
					863.55	863.54	75	100.00%	0.01%		0.002%	
					15.62	15.62	79	100.00%	0.0002%		0.00005%	
					2,491.18	1,698.22	84	68.17%	0.02%		0.005%	
					3,718.19	788.20	84	21.20%	0.01%		0.002%	
					3,544.09	3,183.39	86	89.82%	0.05%		0.01%	
					58.97	58.97	90	100.00%	0.001%		0.0002%	
					12,393.79	539.26	92	4.35%	0.01%		0.002%	
				Reedbed	17,967.14	566.23	91	3.15%	0.01%		0.002%	
				Swamp	50,627.17	34,696.02	44	68.53%	0.50%	0.5%	0.10%	0.1%
					13,094.91	547.42	88	4.18%	0.01%		0.002%	
					6,454.24	68.27	97	1.06%	0.001%		0.0002%	
					2,065.53	53.19	97	2.58%	0.001%		0.0002%	
	N/A		Alvie	Other wet woodland	35,496.93	15,287.46	4	43.07%	0.2%		0.04%	
				Reedbed	2,331.97	768.90	70	32.97%	0.01%		0.002%	
				Seepages /flushes	3,554.02	3,217.45	43	90.53%	0.05%		0.01%	
				Wet Woodland	4,518.01	1,861.44	75	41.20%	0.03%		0.01%	
	N/A		Craigellachie	Marshy Grassland	11,599.15	7,975.23	46	68.76%	0.12%		0.02%	
				Seepages /flushes	16,783.11	1,934.92	43	11.53%	0.03%		0.01%	
				Swamp	706.33	706.33	53	100.00%	0.01%		0.002%	
	N/A			Montane grassland	4,208.08	3,743.88	0.0	88.97%	0.05%	0.07%	0.01%	0.01%
					849.26	849.26	48	100.00%	0.01%		0.002%	
	N/A			Other wet woodland	1,654.92	1,654.92	0.0	100.00%	0.02%		0.005%	
There are no currently dualled sections in Section E and, based on previous discussion within this Report, SEA considers that the Insh Marshes area presents a range of challenges to be managed. In general, the majority of wetland in this Section is in the Marshes and is separated from the road by embankments, cuttings and crossings; therefore SEA considers the risk of impact on wetland												

A9 Section	SAC Name	SPA Name	SSSI Name	WFD95SUB (Wetland Type)	Feature Area (m2)	Corridor Area (m2) in Feature	NEAR_DIST	% of Feature	% of A9 Section		% of Total Corridor	
features within the Marshes as low. However, two feature areas (fen and wet woodland) are identified at zero near distance, which suggests these features are around the existing crossing at Kingussie. SEA considers that there are low risks of effects on the wetland features around the Alvie SSSI, as these should be avoidable via route alignment studies, especially when informed by assessment of feeding water sources. SEA considers that there are low risks of effects on the wetland features around the Craigellachie SSSI, as these are most likely fed by water from the hillside. Previous discussion noted that this site should be avoidable via route alignment studies; however, where avoidance is not feasible, land take from within the site would be considered a major adverse effect, especially were it to impact upon the wetland features noted. There are other areas of wetland within 50m and almost fully within the 200m corridor, for example north of Ralia; therefore, route alignment studies may have to consider alternatives outwith the 200m corridor to avoid these sites (within the context of other constraints). Where avoidance is not possible, local survey and assessment of feeding water sources should inform mitigation to minimise potential adverse effects and support detailed route alignment design. In extreme cases, where avoidance and mitigation is not possible due to other constraints, any wetland losses should be considered a major adverse impact at the local level, and compensatory habitat measures will need to be considered in conjunction with SNH.												
Section F	N/A		Littlemill Fluvio-glacial Landforms Geological SSSI	Marshy grassland	2,010.02	2,010.02	39	100.00%	0.03%	0.03%	0.01%	0.01%
					1,309.83	210.39	82	16.06%	0.003%		0.001%	
	N/A			Marshy grassland	1,240.23	1,240.23	6	100.00%	0.02%	1%	0.004%	0.2%
					14,887.20	8,476.87	13	56.94%	0.11%		0.02%	
					52,819.81	27,801.84	13	52.64%	0.35%		0.08%	
					1,075.30	1,075.30	19	100.00%	0.01%		0.003%	
					3,016.35	2,667.41	21	88.43%	0.03%		0.01%	
					6,514.08	6,459.07	23	99.16%	0.08%		0.02%	
					1,972.80	1,213.43	24	61.51%	0.02%		0.004%	
					49,253.01	5,293.33	29	10.75%	0.07%		0.02%	
					14,052.67	5,217.22	32	37.13%	0.07%		0.02%	
					11,282.62	7,934.77	34	70.33%	0.10%		0.02%	
					892.23	892.23	37	100.00%	0.01%		0.003%	
					183.97	183.97	38	100.00%	0.002%		0.001%	
					2,853.96	1,674.58	45	58.68%	0.02%		0.005%	
					3,436.31	2,820.68	50	82.08%	0.04%		0.01%	
					846.16	846.16	61	100.00%	0.01%		0.002%	
					1,283.94	878.52	65	68.42%	0.01%		0.003%	
					254.76	254.76	67	100.00%	0.003%		0.001%	
					8,513.97	2,988.22	72	35.10%	0.04%		0.01%	
					9,177.56	1,703.92	73	18.57%	0.02%		0.005%	
					808.20	579.18	78	71.66%	0.01%		0.002%	
					5,439.49	117.48	91	2.16%	0.00%		0.0003%	
					7,698.29	53.44	94	0.69%	0.001%		0.0002%	
				Other wet woodland	1,470.08	4.81	99	0.33%	0.0001%		0.00001%	
				Peat bog	8,689.11	4,069.68	12	46.84%	0.05%	0.1%	0.01%	0.03%
					6,643.76	5,112.17	38	76.95%	0.07%		0.01%	
				Seepage/flushes	2,554.64	2,554.64	9	100.00%	0.03%	0.04%	0.01%	0.01%

A9 Section	SAC Name	SPA Name	SSSI Name	WFD95SUB (Wetland Type)	Feature Area (m2)	Corridor Area (m2) in Feature	NEAR_DIST	% of Feature	% of A9 Section		% of Total Corridor	
Section F	N/A				951.11	228.40	80	24.01%	0.003%		0.001%	
				Swamp	274.53	274.53	33	100.00%	0.003%	0.01%	0.001%	0.003%
					595.70	595.70	40	100.00%	0.01%		0.002%	
				Wet heath	12,463.90	9,843.29	5	78.97%	0.13%	2%	0.03%	0.5%
					1,274.04	1,274.04	7	100.00%	0.02%		0.004%	
					391.46	391.46	7	100.00%	0.005%		0.001%	
					2,802.70	2,802.70	10	100.00%	0.04%		0.01%	
					422,627.68	26,329.76	12	6.23%	0.34%		0.08%	
					21,155.40	9,964.90	17	47.10%	0.13%		0.03%	
					167,382.40	58,937.29	20	35.21%	0.75%		0.17%	
					3,947.33	3,947.33	21	100.00%	0.05%		0.01%	
					2,256.01	2,256.01	26	100.00%	0.03%		0.01%	
					2,398,047.60	40,319.73	26	1.68%	0.51%		0.12%	
					9,060.76	3,403.86	45	37.57%	0.04%		0.01%	
					27,750.15	8,702.24	46	31.36%	0.11%		0.03%	
					20,068.44	4,401.26	56	21.93%	0.06%		0.01%	
					159,179.58	3,298.74	69	2.07%	0.04%		0.01%	
					25,277.14	1,131.98	73	4.48%	0.01%		0.003%	
					35,117.49	721.50	79	2.05%	0.01%		0.002%	
					11,532.20	386.19	80	3.35%	0.005%		0.001%	
					15,896.57	1,368.06	86	8.61%	0.02%		0.004%	
					125,498.11	129.97	98	0.10%	0.002%		0.0004%	
					41,140.19	0.08	100	0.0002%	0.000001%		0.0000002%	

Analysis of the wetland data for Section F indicates that the main feature types at risk are marshy grassland, wet heath and a small area noted as swamp.

Such features are to be expected given the local topography in Section F, and mapping analysis indicates that they are generally found along the single carriageway section from Tomatin to Moy.

Route alignment studies may have to consider local alternatives outwith the 200m corridor to avoid these feature areas (within the context of other constraints).

Where avoidance is not possible, local survey and assessment of feeding water sources should inform mitigation to minimise potential adverse effects and support detailed route alignment design.

In extreme cases, where avoidance and mitigation is not possible due to other constraints, any wetland losses should be considered a major adverse impact at the local level, and compensatory habitat measures will need to be discussed with SNH.

Key Findings:

SEA considers that, in terms of Water (Watercourse Crossings), A9 dualling presents potentially **minor to moderate adverse effects** at the local/ site level, depending on the sensitivity of the local watercourse, habitat and species. Due to the number of crossings and culverts required, **moderate adverse effects** are anticipated, cumulatively, at the route wide scale.

Effective design advice from river geomorphology and ecology specialists, and consultation with SNH and SEPA, will minimise local and cumulative risks, and the residual cumulative effect is assessed as **minor adverse**.

SEA considers that, in terms of Water (Flood Risk), A9 dualling could potentially present **major adverse effects** at the local and route wide scales. However, Strategic Flood Risk Assessment, followed by more detailed Flood Risk Assessment where required at the local level, will work to ensure that A9 dualling results in no net increase in flood risk.

Therefore SEA determines that A9 dualling will have **no significant effect** on flooding risks.

SEA considers that, in terms of Water (Wetland Areas), A9 dualling presents the risk of losses at local levels resulting in **minor to major adverse effects**, depending on the sensitivity and value of the wetland habitat affected.

Local level ecology and hydrology survey should determine the feeding water source for groundwater dependent wetlands, to inform route alignment studies and measures to avoid and minimise adverse effects, and the residual cumulative effect is assessed as **minor adverse**.

5.8.5 Strategic Considerations – Water

As stated in Section 2.3.5, one of the aims of this SEA is for the preliminary environmental principles identified through the PPS review to inform the development of a set strategic environmental principles for the A9. The following table highlights the key considerations, identified through the SEA, which may form the basis of strategic environmental principles in relation to Water.

This list is intended to support further discussion on the development of strategic environmental principles with the statutory consultation bodies and it will be subject to on-going review and refinement through the public consultation period. It is intended that an agreed set of strategic environmental principles will be included in the SEA Post Adoption Statement.

Table 5.54 SEA Strategic Considerations – Water

A9 dualling should…	
1.	Prevent deterioration of the status of surface waters
2.	As far as practicable, minimise the number of surface water crossings and culverts required
3.	Where watercourse crossings are unavoidable, design crossings and culverts such that they: • do not affect the hydraulic capacity of a watercourse (and allow for climate change); • minimise effects on morphology/ geomorphology of watercourses; • avoid increasing the risk of flooding; • allow free passage of migratory fish and other species
4.	Incorporate effective Sustainable Drainage Systems (SUDS), informed by landscape and ecology specialists, such that SUDS features deliver other enhancement benefits where possible
5.	As far as practicable, avoid areas of wetland habitat
6.	Incorporate effective site level pollution control measures throughout construction schemes

5.9 Summary Consideration of Near Offline Corridor Options

5.9.1 Section A – Option A6

Discussion through the previous sections has demonstrated that Option A6 presents no significant advantages over the corresponding online corridor. In fact, there are a number of significant disadvantages including:

- Significant swathe cut required through Ancient and Semi Natural Ancient Woodland;
- Greater risk to local woodland species associated with increased fragmentation through the woodland areas;
- Potential for more significant impact on the River Tay (Dunkeld) NSA, associated with cutting through the woodland area;
- Significant impact through The Hermitage National Trust property and GDL; and
- Additional crossings required over the River Tay SAC in areas currently unaffected around The Hermitage GDL.

Therefore:

> ***SEA recommends*** *that Option A6 is* ***not*** *taken forward for further consideration as a viable alternative to the online corridor option.*

5.9.2 Section B – Option B2

Discussion through the previous sections has demonstrated that Option B2 presents no significant advantages over the corresponding online corridor. In fact, there are a number of significant disadvantages including:

- Greater risks to Ancient and Semi Natural Ancient Woodland, in terms of introducing new edge clearance to woodland areas not affected by the current A9;
- Greater risk to local woodland species associated with impacts on woodland areas not affected by the current A9;
- Runs to the opposite side of the River Tay through the Tay floodplain; and
- Additional large crossing of the River Tay SAC required that would also present increased risks for the Shingle Islands SAC and SSSI.

Therefore:

> ***SEA recommends*** *that Option B2 is* ***not*** *taken forward for further consideration as a viable alternative to the online corridor option.*

5.9.3 Section B – Option B4

Discussion through the previous sections has demonstrated that Option B4 presents only one potential advantage over the corresponding online corridor:

- Avoids dualling within the Killiecrankie Battlefield site.

The discussion has demonstrated a number of significant disadvantages including:

- Swathe cuts required through Ancient and Semi Natural Ancient Woodland, including the Pass of Killiecrankie SSSI (which also includes wetland habitat);
- Greater risk to local woodland species associated with impacts on woodland areas not affected by the current A9;
- Potential for more significant impact on the Loch Tummel NSA, associated with cutting through the woodland areas, and more significant change through the Pass of Killiecrankie, specifically identified in the description of the Special Qualities of the NSA. Online dualling will also have some effect; however, as the road is already dualled on the entrance to the Pass, effects are considered less significant; and
- Introduces greater risks to the Tulach Hill and Glen Fender Meadows SAC, the Tulach Hill SSSI and requires additional crossings of the River Tay SAC through areas not affected by the current A9.

Post Assessment Note: Following further discussion with the A9 PES team, it is understood that the road geometry around Pitlochry is particularly challenging and that elements of Option B4 around Pitlochry may actually be more favourable than the online corridor in engineering terms.

Where this is the case, SEA recommends a modification to this alternative such that Option B4 ties back into the A9 before the existing dual carriageway on the approach to Killiecrankie.

This would avoid potential impacts on the Tulach Hill sites and the Pass of Killiecrankie SSSI; therefore, reducing the amount of important woodland and wetland potentially affected. Depending on the final alignment, there may still be a need to cross the River Tay SAC.

Therefore:

> ***SEA recommends*** *that, in its current form, Option B4 is* ***not*** *taken forward for further consideration as a viable alternative to the online corridor option; however,* ***with suitable modifications put in place****, where* ***Option B4 is significantly shortened and ties back into the A9 dual carriageway before Killiecrankie****, it could provide a viable alternative to accommodate a solution around Pitlochry.*

5.9.4 Section B – Option B5

Discussion through the previous sections has demonstrated that Option B5 presents some potential advantages over the corresponding online corridor:

- Potentially avoids effects on the Aldclune and Inverack Meadows SSSI, with corresponding benefits for the wetland habitat within;
- Potentially reduces local risks to the River Tay SAC;
- Increases the distance between the dualled A9 and the Blair Castle GDL boundary;
- Affects the same area of woodland as the online corridor (no significant advantage, but also no significant disadvantage); and
- Straightens 'events' (bends) in the road which may improve sight lines and safety.

SEA found no significant disadvantages when comparing Option B5 with the corresponding online corridor; therefore:

> ***SEA recommends*** *that Option B5* ***is*** *taken forward for further consideration as a viable alternative to the online corridor option.*

6 SEA Findings & Recommendations

6.1 Summary of Key Findings

This section collates the key findings presented through the previous discussion.

Material Assets (Resource Efficiency)

SEA considers that *online* dualling will minimise material consumption through retained use of existing infrastructure; leading to potentially **moderate adverse effects** in terms of consumption of local material resources and the associated embodied carbon footprint.

Alternative routes and offline dualling would increase consumption and carbon effects.

Use of local material suppliers would likely provide local population benefits and help to minimise the overall footprint in terms emissions associated with material transportation.

Population and Human Health

SEA considers that, in terms of Population and Human Health (road safety and accident severity), A9 dualling will present **major positive effects with significant long term benefits,** across the route length.

SEA considers that, in terms of Population and Human Health (emissions to air), A9 dualling could provide minor benefits to air quality, in terms of improved traffic flow and reduced emissions over the long term; however, it is more likely that dualling will present **no significant effects at the route wide scale**.

There is potential for **localised minor adverse effects** during construction stages, where works are near sensitive receptors (human and/ or ecological receptors).

SEA considers these as **temporary effects, important at the local level**, requiring detailed consideration and mitigation through local EA and construction environmental management planning best practice; however, they are not considered significant issues at the strategic programme level.

SEA considers that, in terms of Population and Human Health (recreation, access and public transport), A9 dualling will present **no significant adverse effects**.

Some link roads and paths will be rerouted to new junction locations and/ or safe crossing points with the potential for **minor localised adverse effects** in terms of longer connecting routes; however, principally as more of an inconvenience, rather than a loss of access or connectivity.

Some users may consider a longer path to a safer crossing point a **minor benefit** in health terms; however, NMU rationalisation should work to minimise the distance between crossings.

Emerging Lay By, NMU and Junction strategies, coupled with considerations on public buses and DDA compliance, are assessed as likely to provide **minor beneficial effects at the local level** and, cumulatively, as **moderate beneficial effects at the route wide scale**.

Landscape

SEA considers that, with respect to Landscape (National Scenic Areas), *online* dualling will minimise the potential risk of adverse effects on the River Tay (Dunkeld) and Loch Tummel NSAs, presenting relatively **minor adverse effects** associated with widening the existing road.

Options A6, B2 and B4 will present higher risk of **moderate to major adverse effects**, due to swathe cuts through woodland, new routes between woodland and river, and more significant change through the Pass of Killiecrankie.

SEA considers that, with respect to Landscape (Wildness and Dark Skies), the route-wide cumulative effect of online dualling will be minimal; however, due to the potential for permanent lighting change, which may be associated with junction safety requirements in some areas, the cumulative effect is assessed as **minor adverse**.

SEA considers that, with respect to Landscape (View from the Road), the early incorporation of opportunity views, supported with design guidance on the potential for enhanced lay bys, is a key enhancement measure for A9 dualling. This is likely to present **locally minor benefits**, aggregating to a **cumulatively moderate benefit** at the route wide scale.

More detailed Landscape and Visual Impact Assessments will be required through later detailed design stages for A9 dualling, at the local level; informed by the strategic level work being undertaken via the Landscape Review.

Road works will present highly visible effects during and post construction periods, and guidance on a range of screening and landscaping measures to soften the effects will be determined in consultation with SNH, CNPA and other stakeholders.

A balance will need to be struck between landscape, opportunity views and other factors, including safety and biodiversity, through the detailed design phases.

Historic Environment

SEA considers that, with respect to Historic Environment (Scheduled Monuments), only Section B presents risks of direct adverse effects, given the proximity of some Scheduled Monuments to the current route.

Any physical loss would be a **major adverse effect**; however, where dualling designs avoid direct impacts, SEA considers that effects on setting will be minimal, again given their current proximity to the existing road.

At the route wide scale, there are likely to be a number of monuments outwith the 200m corridor, that have visibility to/ from the road. There are, therefore, likely to be some risks of **locally minor adverse effects** on the setting of such monuments; however online dualling is expected to minimise such risks.

SEA considers that, with respect to Historic Environment (Battlefields), the online corridor option has the potential to present **major adverse effects** at the site level.

Near offline Option B4 has the potential to reduce effects on the site; however, when considered in the wider local context is likely to present **major adverse impacts** on other constraints.

On balance, SEA recommends the online option as preferable, with site level mitigation.

Site level options should be developed via route alignment studies and more detailed environmental assessment, in consultation with Historic Scotland and other key stakeholders, to inform detailed designs and to manage change in a sympathetic manner.

With strategic mitigation recommendations in place, SEA considers that residual impacts on the battlefield would be low in magnitude, resulting in a **moderate adverse effect**.

SEA considers that, with respect to Historic Environment (Gardens and Designed Landscapes), the online corridor option has the potential to present locally **minor adverse effects** at the site level. These are generally considered to be related to visual change associated with widening as opposed to physical losses.

Near offline Option A6 is likely to present **major adverse impacts** on The Hermitage GDL, as it would lead to physical loss of features within the site boundary. On this basis, SEA considers the online option more favourable in this area.

Near offline Option B5 could potentially reduce effects around the Blair Castle GDL, depending on the consideration of other constraints and local topography.

SEA considers that, with respect to Historic Environment (Listed Buildings), in the context of other constraints, the online corridor option is preferable to near offline options A6, B2 and B4.

Route wide, 39 Listed Buildings are identified within the 200m online corridor, around single carriageway sections, and route alignment studies should aim to avoid these heritage features as a primary principle.

Avoidance will mean that online dualling has the potential to present locally **minor adverse effects** on setting at the site level.

Where avoidance is not possible via route alignment studies, risk of loss is considered low; however, dualling has the potential for **moderate to major adverse effects** at the site level.

Detailed environmental assessment and local level consultation will be required to determine suitable site level design mitigation.

Biodiversity, Flora and Fauna

SEA considers that, in terms of Biodiversity, Flora and Fauna (Ancient and Semi Natural Ancient Woodland), A9 dualling will likely result in **minor losses at local levels** around widened road boundaries.

Taking into account the additional effects on internal woodland habitat, to be expected with widening edge effects, SEA finds that online A9 dualling is likely to present, cumulatively, a **moderate adverse effect** on AW and SNAW.

Should any of near offline routes A6, B2, B4 be taken forward these would be assessed as presenting **major adverse effects,** in terms of additional losses and habitat fragmentation.

Route alignment studies within a preferred corridor, coupled with local level survey and environmental assessment to inform design work should avoid or, where this is not possible, minimise land take from Ancient, Semi-Natural Ancient, and other Woodlands wherever possible.

Where land take from woodland is unavoidable via alternative alignment considerations, appropriate mitigation and restoration plans will be required.

Similarly, **local minor adverse secondary effects** are likely for species, in terms of a widening of the current infrastructure barrier between woodlands, raised to **locally major adverse effects** should any new routes be cut through woodlands.

SEA considers that local level mitigation in terms of pipes, tunnels, culverts, rope bridges between higher trees, and pedestrian subway crossings will improve permeability and connectivity across the road structure, reducing the severity of secondary adverse barrier effects.

HRA Screening considers that, in terms of Biodiversity, Flora and Fauna (Natura and Ramsar sites), A9 dualling has the **potential to present Likely Significant Effects (LSE)** on the:

– River Tay SAC;

– Tulach Hill and Glen Fender Meadows SAC;

– River Spey SAC;

– River Spey – Insh Marshes SPA and Ramsar site;

– Insh Marshes SAC; and

– Drumochter Hills SPA and SAC.

SEA considers that dualling has the potential for **major adverse effects** on the Drumochter Hills and Insh Marshes sites, and **minor adverse effects** on the other designations.

Each of these sites will be examined further through strategic programme level Appropriate Assessment to consider a range of inter-related dualling issues, and determine effective strategic mitigation recommendations.

SEA considers that, in terms of Biodiversity, Flora and Fauna (National Nature Reserves), there is sufficient clearance around the current single carriageway to avoid encroaching on the Craigellachie NNR site, which would result in **no significant adverse effects**.

Should route alignment studies prove unable to avoid encroaching on this site, any land take should be minimised and would require consultation with SNH to determine appropriate mitigation measures.

Land take from the NNR would be minimal; however, as it would represent permanent loss within a national site, it could present potentially **major adverse effects at the site level**, depending on the sensitivity of the habitat/ species affected.

Strategic mitigation measures developed under the strategic AA for the Insh Marshes Natura and Ramsar designations will be designed to result in no LSE for the Natura designations, and SEA will ensure that these equally result in guidance to avoid significant adverse effects to the Insh Marshes NNR.

SEA considers that, in terms of Biodiversity, Flora and Fauna (Biological SSSI sites), the majority of SSSI sites within the 200m online corridor are avoidable via route alignment studies, either by widening to the opposite side of the carriageway, or minimising the dualling footprint in the narrower area around Craigellachie, which would result in **no significant adverse effects**.

Should route alignment studies prove unable to avoid encroaching on the Craigellachie site, in Section E, any land take should be minimised and would require consultation with SNH to determine appropriate mitigation measures.

Land take from the SSSI would be minimal; however, as it would represent permanent loss within a national site, it could present potentially **major adverse effects at the site level,** depending on the sensitivity of the habitats/ species affected.

Similarly, the online corridor option in Section B presents the potential for **major adverse effects at the site level** on the Aldclune and Inverack Meadows SSSI, should the preferred route alignment encroach upon, and require land take from within, the site.

Near offline Option B5 could be preferable to the online corridor at this location, as this would avoid encroaching on the SSSI.

Strategic mitigation measures developed under the strategic Appropriate Assessment for the Tulach Hill, Drumochter Hills and Insh Marshes Natura and Ramsar designations will be designed to result in no LSE for the qualifying interest features of the Natura designations. SEA will ensure that corresponding features of the SSSI designations on these sites are equally considered.

Given that the Drumochter Hills SSSI has different boundaries than the SAC/ SPA designations, there remains some risk of potentially **major adverse effects at the site level.**

Detailed local environmental survey and assessment will be required to inform A9 dualling route alignment studies through the Drumochter Hills SSSI site, to ensure that the overall footprint width is minimised, that SSSI features are identified and avoided wherever possible, and that effective site level mitigation is agreed with SNH.

This would likely reduce the risk of residual environmental effects to **moderate or minor adverse effects** at the site level.

SEA considers that, in terms of Biodiversity, Flora and Fauna (Species), A9 dualling will present **minor adverse effects** at the local level, in terms of the potential for woodland edge clearance and associated habitat loss and barrier effects.

Dualling could equally provide **locally minor beneficial effects** by improving permeability through the route for species.

Local ecology surveys at later design stages will inform locally appropriate mitigation and species management plans.

Soil

SEA considers that, in terms of Soil (Peat), online dualling presents the potential for **major adverse effects** in Sections C, D and F, and **minor adverse effects** in Section E.

The area through the Drumochter Pass will be particularly challenging given the constrained nature of the valley floor, and should dualling impact areas of active blanket bog, then a **major adverse effect at the site level** would be determined due to the priority nature of this habitat.

Local level peat ecology, hydrology and geotechnical survey will be required to determine locally appropriate solutions which minimise the potential effects of drainage and desiccation, and inform suitable restoration and management plans.

SEA considers that, in terms of Soil (Agricultural Land), online dualling will result in **minor adverse effects** on prime quality land (Grade 2-3.1) in Section A, and **minor adverse effects** on mixed agricultural land (Grade 3.2-4.2) across all sections, other than Section D where no such land is identified.

At the route wide level, potential losses of productive agricultural land are considered to present a **cumulative minor adverse effect** as the overall scale of losses is expected to be low.

SEA considers that, in terms of Soil (GCR and Geological SSSI), A9 dualling presents potentially **mixed effects**, with risks of adverse impacts and opportunities for local enhancement.

Potential enhancement benefits could be realised around Glen Garry and Slochd; however, early agreement is required with SNH on the preferred approach to provide strategic guidance.

Geomorphological features in the Drumochter Hills SSSI site will require local survey to determine their location and avoidance and mitigation recommendations; however, the issues could be discussed under the developing work to provide a strategic level Appropriate Assessment for the Drumochter Hills SAC/ SPA designations.

Water

SEA considers that the improvement of A9 drainage, with incorporation of SUDS, will present:

– **Minor local benefits**, aggregating up to a **moderate regional benefit,** with respect to long term improvements to discharge water quality

– **Minor local benefits,** potentially aggregating up to a **moderate regional benefit,** with respect to provision of crossing opportunities, habitat connectivity, limiting barrier effects and potential habitat creation for biodiversity

– **Mixed effects** in terms of landscape and visual issues, where sympathetic design of individual SUDS features could be an enhancement/ present minimal issues locally, but where a large number of SUDS features could have a noticeable effect on regional character.

SEA considers that, in terms of Water (Watercourse Crossings), A9 dualling presents potentially **minor to moderate adverse effects** at the local/ site level, depending on the sensitivity of the local watercourse, habitat and species.

Due to the number of crossings and culverts required, **moderate adverse effects** are anticipated, cumulatively, at the route wide scale.

Effective design advice from river geomorphology and ecology specialists, and consultation with SNH and SEPA, will minimise local and cumulative risks, and the residual cumulative effect is assessed as **minor adverse**.

SEA considers that, in terms of Water (Flood Risk), A9 dualling could potentially present **major adverse effects** at the local and route wide scales. However, Strategic Flood Risk Assessment, followed by more detailed Flood Risk Assessment where required at the local level, will work to ensure that A9 dualling results in no net increase in flood risk.

Therefore SEA determines that A9 dualling will have **no significant effect** on flooding risks.

SEA considers that, in terms of Water (Wetland Areas), A9 dualling presents the risk of losses at local levels resulting in **minor to major adverse effects**, depending on the sensitivity and value of the wetland habitat affected.

Local level ecology and hydrology survey should determine the feeding water source for groundwater dependent wetlands, to inform route alignment studies and measures to avoid and minimise adverse effects, and the residual cumulative effect is assessed as **minor adverse**.

6.2 Key Recommendations

The key recommendations from the SEA analyses are:

- **SEA recommends** that Option A6 is **not** taken forward for further consideration as a viable alternative to the online corridor option.
- **SEA recommends** that Option B2 is **not** taken forward for further consideration as a viable alternative to the online corridor option.
- **SEA recommends** that, in its current form, Option B4 is **not** taken forward for further consideration as a viable alternative to the online corridor option; however, **with suitable modifications put in place**, where **Option B4 is significantly shortened and ties back into the A9 dual carriageway before Killiecrankie**, it could provide a viable alternative to accommodate a solution around Pitlochry.
- **SEA recommends** that Option B5 **is** taken forward for further consideration as a viable alternative to the online corridor option.

The series of other recommendations noted throughout the main body of the Report are collated under Section 7, SEA Monitoring.

6.3 Programme Recommendations

In terms of identifying areas where the A9 dualling programme could potentially realise quick wins, in terms of bringing schemes forward for construction programming, SEA considers that the programme should prioritise the least environmentally constrained areas to enable additional time for iterative design and approvals on the more constrained areas.

SEA considers that the areas of least constraint, which therefore have potential to be developed in a shorter time-scale and, as a consequence, be brought to construction earlier in the programme, include:

- Section F, connecting the dual carriageways from Tomatin north past Moy
  no statutory or international designations, potentially significant wetland and peat issues.
- Section D, from Dalwhinnie north to Crubenmore dual carriageway
  outwith Drumochter Hills designations, River Spey SAC runs generally outwith the 200m corridor, potentially significant peat issues.
- Section E, from Crubenmore dual carriageway past Ralia towards Ruthven
  relatively short section, minor peat and wetland issues, River Spey SAC runs generally outwith 200m corridor, potential flood plain concerns around Ruthven.
- Section C, Struan/ Pitagowan to Glen Garry dual carriageway
  no international designations, some woodland and minor flood plain in Glen Garry, key issue is geological SSSI and GCR designations.
- Section F, from Carrbridge to the dual carriageway at Slochd
  woodland and River Spey SAC crossings at Carrbridge, potentially significant peat issues towards Slochd and Slochd GCR site.
- Section A from Luncarty to Pass of Birnam dual carriageway
  River Tay SAC crossings, agricultural land and woodland issues.
- Section B from Tay Crossing to the dual carriageway south of Ballinluig
  proximity to River Tay SAC and some flood plain issues.

These sections are not constraint free, but are considered likely to present fewer environmental issues in terms of Natura sites, SSSI and flooding.

SEA considers the areas of greatest constraint to include:

- Section C, from Glen Garry dual carriageway through Drumochter and onto Dalwhinnie
  multiple SAC, SPA, SSSI, restricted corridor through the Pass of Drumochter, multiple peat, wetland, protected habitat and species issues.
- Section E, from Ruthven past Kingussie to Kincraig
  heavily designated, multiple SAC, SPA, Ramsar, Nature Reserve, SSSI, flood plain, etc.
- Section E from Dalraddy past Aviemore and Kinveachy to Carrbridge
  multiple woodland, SAC, SPA, SSSI, Nature Reserve, etc.
- Section B around Pitlochry and through Killiecrankie battlefield.

These sections will need detailed iterative discussions with SNH, SEPA, CNPA and Historic Scotland to determine the most acceptable alignment and engineering solutions. Care will need to be taken to ensure construction includes designated site boundaries within single schemes.

The areas noted in Section C and Section E are the key areas recommended for discussion with stakeholders at a Natura/ Appropriate Assessment workshop during the SEA ER Consultation period. These sections should be considered for early design scheduling to enable iterative review, consultations, supporting studies and approvals by relevant bodies, with construction considered later in the programme.

7 SEA Monitoring

7.1 Proposed Monitoring Framework

Given the nature of an infrastructure delivery programme, there is unlikely to be a revision/ update to the SEA; therefore a typical SEA monitoring framework, which considers change and progress on issues between plan review periods, is not considered appropriate.

The intention is to develop an A9 project level assessment framework and checklist, to support an overarching A9 design guide, and to ensure that strategic environmental principles are embedded and tested across each scheme design and carried through to construction stages.

Further work on the A9 dualling strategic environmental principles will continue through the SEA public consultation period, for inclusion with the monitoring framework in the SEA Post Adoption Statement.

7.2 Monitoring SEA Recommendations

The tables below provide a preliminary framework, based on the recommendations from the earlier SEA discussion sections. It should be noted that this is provided as an example only at this stage.

Recommendations may be subject to review following feedback from the public consultation process. The framework will be updated to include strategic environmental principles and any additional recommendations from the supporting strategic studies that are currently underway, including the Landscape Review, the Strategic Flood Risk Assessment and the Habitats Regulations Appraisal/ Appropriate Assessment process.

The final column of the tables is there to demonstrate that the framework could be used to record progress against recommendations.

Table 7.1 Draft SEA Monitoring Framework – SEA Procedural Aspects

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
SEA Procedural						
SEA to oversee the production of a strategic programme level Appropriate Assessment for Natura sites identified via HRA Screening as having the potential to experience Likely Significant Effects (LSE).	*SEA recommends a workshop with SNH, SEPA and CNPA, during the SEA ER consultation period, to discuss a range of issues around key Natura sites in order to inform the AA.*	A9 SEA team	Transport Scotland SNH SEPA CNPA A9 PES team	July-Sept 2013 Report findings and recommendations in SEA Post Adoption Statement	Y Recommendations are expected to inform an A9 Design Guide	
SEA to assess the outcomes of the emerging Junction Strategy in terms of broadly indicative areas for junction locations.	*Key aspects to be considered include the potential direct and indirect impacts from potential land take required for grade separated junctions.*	A9 SEA team	A9 PES team Transport Scotland	July-Sept 2013 Report findings and recommendations in SEA Post Adoption Statement	Y Recommendations are expected to inform an A9 Design Guide	
SEA to review the outcomes of the emerging Lay-By Strategy, in terms of the strategic principles and guidance for later design stages.	*SEA cannot provide any detailed assessment on the potential siting/ location of lay-bys along an as yet undetermined route alignment.*	A9 SEA team	A9 PES team Transport Scotland	July-Sept 2013 Report findings and recommendations in SEA Post Adoption Statement	Y Recommendations are expected to inform an A9 Design Guide	
SEA to review the outcomes of the emerging Non Motorised User (NMU) Strategy, in terms of the strategic principles and guidance for later design stages.		A9 SEA team	A9 PES team Transport Scotland	July-Sept 2013 Report findings and recommendations in SEA Post Adoption Statement	Y Recommendations are expected to inform an A9 Design Guide	
SEA to contact the Highland Mainline Improvements Project team, to determine whether option sites for HML passing loops have been identified in the interim period.	*If so, option sites to be considered in a more detailed cumulative effects assessment.*	A9 SEA team	Transport Scotland Highland Mainline Improvements Project team	July-Sept 2013 Report findings and recommendations in SEA Post Adoption Statement	Y Recommendations are expected to inform an A9 Design Guide	

Table 7.2 Draft SEA Monitoring Framework – SEA Recommendations

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
Material Assets						
SEA recommends *that, wherever possible, A9 dualling uses locally sourced materials and suppliers.*	*To reduce material transport emissions and to support local businesses.*	Transport Scotland	Construction Contractors	Sustainability requirement in construction contracts	N Contract issue	
SEA recommends *strategic programme level discussions with SEPA to investigate potential mechanisms to support material resource efficiency along the route.*	*For example, temporary depots for excavated material, etc.*	Transport Scotland	SEPA DMRB 3 designers Construction Contractors	Construction stage guidance on transfers between A9 sites	N Construction issue	
SEA recommends *that Site Waste Management Plans are adopted as best practice across all A9 dualling schemes.*		Transport Scotland	Construction Contractors	Requirement for SWMP in construction contracts	N Contractual and construction management issue	
Population & Human Health						
SEA recommends *that consultations take place with the relevant Local Authorities and Cairngorms National Park Authority (CNPA) to determine where any planned non-trunk road projects and development plan land allocations need to be taken into account, in DMRB Stage 2 route alignment studies, to inform final decisions on junction locations and connecting roads.*	*Generally completed as standard under DMRB Stage2 at individual scheme level, but worth considering at route wide strategic level.*	Transport Scotland A9 PES team	Local Authorities Cairngorms National Park Authority	End Dec 2013	Y	
SEA recommends *that where NMU routes require combination and/ or diversions to safer crossing points, any permanent diversions should be designed to provide the same, or improved, standard of pathway.*		Transport Scotland A9 PES team	DMRB Stage 3 designers	End Dec 2013 Include in emerging NMU Strategy	Y	

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
Landscape & Visual						
SEA recommends *that early consultations take place with key stakeholders to determine strategic landscape design principles and guidance.*	*To minimise visual impacts and ensure high quality design of structures, which respect and reflect the locally changing character of the A9 route.*	Transport Scotland A9 PES Team	Landscape Review team Architecture & Design Scotland (A&DS)	End Q2 2014	Y	
SEA recommends *a preference for underpass crossings, rather than overbridges, wherever possible*	*To minimise visual intrusion to the surrounding landscape and to provide safer crossing opportunities for both humans and local mobile species.*	Transport Scotland	DMRB 2/3 Design teams	n/a	Y	
SEA recommends *that a general strategic principle on the avoidance of lighting on the A9 mainline be adopted, except where absolutely required by safety standards.*	*This principle should also apply to the consideration of signage requirements, with a preference for unlit signs wherever possible.*	Transport Scotland	DMRB 2/3 Design teams	n/a	Y	
SEA recommends *that detailed consideration be given to the viability and reliability, in terms of safety requirements, of automatic lighting controls on the A9, such that in the absence of vehicle movements, junction lighting is dimmed or switched off.*	*Requires consultation with key stakeholders to determine whether automatic switching on/ off could be considered a nuisance in some locations; however, it could also provide long term benefits in terms of limiting energy consumption.*	Transport Scotland	Local Authorities Cairngorms National Park Authority	End Q2 2014	Y	
SEA recommends *that a general strategic principle on the avoidance of overhead signage and gantry structures be adopted, except where absolutely required by safety standards.*		Transport Scotland	DMRB 2/3 Design teams	n/a	Y	
SEA recommends *that a signage strategy should be considered to develop strategic guidance on sign placement; in order to avoid placing signs in locations that would present detrimental visual intrusion on important views from the road.*		Transport Scotland Landscape Review team	SNH Cairngorms National Park Authority	End Q1 2014	Y	

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
SEA recommends *that consultations take place with the Cairngorms National Park Authority (CNPA) and SNH to determine a range of acceptable barrier options, to provide guidance for later design and construction stages.*	*European public procurement requirements may prevent the specification of particular products.*	Transport Scotland Landscape Review team	A9 PES team SNH Cairngorms National Park Authority	End Q1 2014	Y	
Historic Environment						
SEA recommends *that early consultations take place with Historic Scotland and other key stakeholders to inform design guidance around Killiecrankie Battlefield*	*To manage change in a sympathetic manner and to minimise potential adverse effects on battlefield setting, context and interpretation*	Transport Scotland	Historic Scotland Cairngorms National Park Authority	End Q1 2014	Y	
SEA recommends *that route alignment studies consider the potential for effects on unscheduled archaeology in route selection*	*Historic Scotland advised that this bank of information will help advise route alignment studies and local survey work at more detailed design stages.*	Transport Scotland DMRB 2/ 3 design teams	Historic Scotland Local Authorities Cairngorms National Park Authority	n/a	Y	
SEA recommends *that A9 dualling tracks the progress of the historic environment policy review as it may have implications for more detailed design stages and project level environmental assessments.*	*Historic Scotland advise that historic environment policy in Scotland is currently under review, and that the findings of the review will be implemented during the lifetime of the A9 dualling programme.*	Transport Scotland	Historic Scotland	n/a	Y	
Biodiversity						
SEA recommends *a workshop with SNH, SEPA and the Cairngorms National Park Authority (CNPA), to inform a strategic level Appropriate Assessment and the development of suitable guidance for later design stages around the Tay, Spey, Tulach Hill and Glen Fender Meadows, Drumochter Hills and Insh Marshes designated Natura and Ramsar sites.*	*Any updated findings and recommendations of the strategic level AA will be incorporated into the SEA Post Adoption Statement and Monitoring Framework.*	A9 SEA team (also noted in procedural recommendations)	SNH CNPA	July-Sept 2013	Y Outputs will inform strategic design guidance	

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
SEA recommends *that outline Strategic Principles for Biodiversity include a presumption in favour of:* *(1) avoiding land take from AW and SNAW wherever possible,* *(2) minimising the dualled route width through AW and SNAW areas*	*To limit additional barrier effects; for example, considering the viability of locating lay bys outwith high value woodland boundaries.*	Transport Scotland	A9 PES team SNH	n/a	Y	
SEA recommends *that deer crossings and fencing should be considered further at the more detailed design and local environmental assessment level.*	*Locally balanced solutions should be informed by best practice guidance and consultation with key stakeholders and specialists.*	Transport Scotland DMRB 2/ 3 design teams	SNH Deer Commission	n/a	Y	
Soils & Geological						
SEA recommends *that strategic design guidance includes principles on aesthetic quality requirements for cuttings, to minimise the residual visual effects of cutting activity.*	*Where possible, cuttings should look more 'natural' with less obvious visual imprint of cutting activity in the rock face.*	Landscape Review team	SNH Cairngorms National Park Authority	n/a	Y	
SEA recommends *that detailed design and local environmental assessment consults with SNH and other key stakeholders on the potential opportunities for cutting activity to expose features of geodiversity interest.*	*There may be opportunities around Glen Garry and The Slochd GCR site.*	Transport Scotland DMRB 2/ 3 design teams	Landscape Review team SNH JNCC Local RIGS representatives	n/a	Y	
SEA recommends *early discussion and agreement with SNH, on a preferred approach to the Glen Garry SSSI site, to inform strategic design guidance.*	*Should the decision be that no construction takes place within the site boundary, route alignment studies will have to consider alternative alignments outwith the 200m corridor.*	Transport Scotland	Landscape Review team SNH	End Q1 2014	Y	

SEA Recommendation	Comment	Lead Responsibility	Key Stakeholders	Target Timescale & Outputs	Include in A9 Design Guide (Y/N/ Comment)	Progress
Water & Flooding						
SEA recommends *that a strategic principle on the avoidance of increased flood risk is adopted.*	*To avoid flood risk and consider mitigation where unavoidable.*	Transport Scotland SFRA team	SEPA DMRB 2/ 3 design teams	n/a	Y	
SEA recommends *that a general strategic principle on the separation of road surface runoff from surrounding environmental surface water runoff is adopted.*	*Inter-related with Biodiversity* *Generally adopted within best practice road drainage design*	Transport Scotland	SEPA SNH	n/a	Y	
SEA recommends *detailed consultation with SEPA specifically to provide strategic design guidance on SUDS in the flood zone.*	*To enable strategic guidance on what is/ is not acceptable in key flood risk areas*	Transport Scotland SFRA team	SEPA	July-Sept 2013 Report findings and recommendations in SFRA Report and SEA Post Adoption Statement	Y	
SEA recommends *detailed consultation with SEPA, SNH and other key stakeholders to specifically consider the issues and risks around SUDS, to provide strategic design guidance on the levels of treatment required before discharge to SAC designated areas.*	*To enable strategic guidance on 2 or 3 levels of treatment where necessary*	Transport Scotland A9 SEA Team	SEPA SNH A9 PES team	July-Sept 2013 Value in including issue in recommended Natura/ AA workshop	Y	
SEA recommends *that A9 SUDS design is informed by landscape and ecological specialists to secure maximum additional benefits in terms of integration within the surrounding landscape, minimising visual impact and delivering ecological enhancement.*	*A specific strategic study to provide A9 SUDS design guidance would support a consistent approach along the route.* *Inter-related with Landscape and Biodiversity*	Transport Scotland Landscape Review team	SEPA SNH Cairngorms National Park Authority	End Dec 2013	Y	

8 Next Steps

8.1 Environmental Report Consultation Period

To help maintain progress on the wider A9 dualling delivery programme, an 8-week consultation period has been agreed for this Environmental Report. The consultation period will therefore close on Friday 26th July 2013.

Key aspects for feedback should relate to the findings and recommendations of the SEA assessment, particularly any areas where respondents feel that the SEA may have omitted important factors.

Written feedback is welcomed and should be addressed to:

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Statutory consultees should respond via the Scottish Government SEA Gateway.

8.2 Public Consultation Events

A series of A9 dualling public consultation events are planned between Monday 3rd June and Friday 14th June, where representatives of the A9 dualling programme SEA team will be available to discuss the issues covered by this Environmental Report.

8.3 Consultation Feedback Review

Following the closing date of the Environmental Report consultation period, all written feedback will be collated to inform a final review of the SEA findings and recommendations. A record of feedback and how it has been taken into consideration will be documented in the SEA Post Adoption Statement.

8.4 Post Adoption Statement & Finalised Monitoring Framework

SEA legislation requires the publication of a SEA Post Adoption Statement (PAS) which must include any revised recommendations and a finalised SEA monitoring framework. The PAS document must also include a record of consultation and a description of how the SEA process has improved the final plan or programme.

The current target for delivery of the Post Adoption Statement is October 2013.

9 List of Acronyms Used

Table 9.1 List of Acronyms

Acronym	Definition
AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
BAU	Business As Usual
BDL	Beauly Denny Line (electricity grid infrastructure project)
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CNP	Cairngorms National Park
CNPA	Cairngorms National Park Authority
CO2	Carbon Dioxide
CO2e	Carbon Dioxide equivalent
D2AP	Transportation industry shorthand for an All Purpose Dual Carriageway
dBA / dBAleq	Units of noise measurement in decibels, averaged over a period of time to represent the equivalent continuous level
DMRB	Design Manual for Roads and Bridges
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ER	Environmental Report
FC	Forestry Commission
GCR	Geological Conservation Review
GDL	Gardens and Designed Landscapes
GIS	Geographical Information System
HDV	Heavy Duty Vehicle
HH	Human Health
HML	Highland Mainline (rail network improvements project)
HRA	Habitats Regulations Appraisal
HS	Historic Scotland
IIAA	Information to Inform Appropriate Assessment
IIP	Infrastructure Investment Plan
LA	Local Authority
MS	Microsoft
n/a	Not Applicable
NBN	National Biodiversity Network
NMU	Non-Motorised Users
NNIS	Non-Native Invasive Species
NNR	National Nature Reserve
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NP	National Park
NPF	National Planning Framework
NSA	National Scenic Area
NTS	National Transport Strategy
OS	Ordnance Survey
pdf	Adobe file (portable document format)
PES	Preliminary Engineering Services

Acronym	Definition
PKC	Perth and Kinross Council
PM10	Particulate Matter under 10 microns in diameter
Pop	Population
PPS	Policies, Plans and Strategies
Ramsar	International biodiversity designation under the Ramsar Convention for wetland sites
RERAD	Rural and Environment Research and Analysis Directorate (Scottish Government department)
SAC	Special Area of Conservation - international biodiversity designation under the EU Habitats Directive
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
SFRA	Strategic Flood Risk Assessment
SHETL	Scottish Hydro Electric Transmission Ltd
SNH	Scottish Natural Heritage
SPA	Special Protection Area - international biodiversity designation under the EU Birds Directive
SPP	Scottish Planning Policy
SPT	Scottish Power Transmission
SSSI	Special Site of Scientific Interest - UK designation for important biodiversity and geological sites
STPR	Strategic Transport Projects Review
SuDS	Sustainable Drainage System
THC	The Highland Council
TS	Transport Scotland
WFD	Water Framework Directive
WHO	World Health Organisation
WRAP	Waste and Resources Action Programme
WS2+1	Transportation industry shorthand for an overtaking scheme where a single carriageway is widened on one side only to provide 2 lanes on one side and a single lane on the other
ZWS	Zero Waste Scotland

List of Appendices

Appendix A **Policies, Plans and Strategies (PPS) Review**
Documents the range of PPS considered at Scoping stage

Appendix B **Scoping Report Response Tables**
Documents Scoping stage feedback from the statutory consultees

Appendix C **Detailed Assessment Matrices**
Issue based assessments for six online corridor sections and near offline corridor option B4

Appendix D **GIS Mapping**
6x A9 corridor sections provided as Adobe pdf files
Each corridor section (A, B, C – F) includes the following numbered maps:

001 – Natura Sites
002 – Biological SSSI Sites and National Nature Reserves
003 – Ancient Woodland & Semi Natural Ancient Woodland
004 – Species (NBN data on Otter, Red Squirrel, Wildcat)
005 – National Scenic Areas and Cairngorms National Park
006 – Landscape Character Types
007 – Wildness Composite
008 – Peat and Peaty (high carbon) Soils
009 – Wetlands
010 – 200 year indicative flood zone
011 – Surface Watercourses
012 – Land Capability for Agriculture
013 – Scheduled Monuments, Battlefields, Gardens & Designed Landscapes
014 – Listed Buildings and Conservation Areas
015 – Accident Locations
016 – Core Paths and Cycle Routes
017 – Other Corridor Infrastructure
018 – Geological/ Mixed SSSI & Geological Conservation Review sites

Appendix E **Indicative Corridor Options Sifting Report**
Provides a record of the consideration of alternative and near offline corridors

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A9 DUALLING
PERTH TO INVERNESS

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