

20 Cumulative Effects

20.1 Introduction

- 20.1.1 This chapter presents the Environmental Impact Assessment (EIA) of the potential cumulative effects associated with the Proposed Scheme, which is described in full in **Chapter 5**. The requirement for an assessment of cumulative effects is set out in EIA Directive (85/33/EEC), which along with amendments was codified by Directive 2011/92/EU, which was further amended in 2014 by Directive 2014/52/EU.
- 20.1.2 Whilst it is recognised that the A9 Dualling Programme as a whole (Perth to Inverness) could potentially give rise to cumulative effects related to traffic volume change, this chapter considers:
- The combined effect of a number of individual impacts arising as a result of the Proposed Scheme on a single sensitive receptor/ resource (Type 1 cumulative effects)
 - The combined effects of the Proposed Scheme with other reasonably foreseeable development schemes on a single sensitive receptor/ resource (Type 2 cumulative effects)

20.2 Approach and Methodology

Scope and Guidance

- 20.2.2 Design Manual for Roads and Bridges (DMRB) HA218/08 ‘*Glossary of Terms Used in DMRB Volume 11, Sections 1 and 2*’ (Highways Agency et al., 2008) refers to the European Commission (EC) ‘*Guidelines for the Assessment of Indirect and Cumulative Impacts and Impacts Interactions*’ (EC, 1999) for a common definition of cumulative impacts. It is this definition that has been applied in the methodology used for this EIA:

“Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project.”

- 20.2.3 As far as this EIA is concerned, HA218/08 confirms that:
- “a cumulative impact may arise as the result of:*
- a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project on a single receptor/ resource*
 - b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/ resource”.*

Type 1 Cumulative Effects

- 20.2.4 An assessment was undertaken of the potential for cumulative effects on individual resources and receptors resulting from different residual impacts from the Proposed Scheme, based on the topic-specific assessments presented in **Chapters 8-18**.
- 20.2.5 In the absence of an established methodology for assessing effect interactions that lead to Type 1 effects, but with cognisance of the ‘*EC Guidelines for the Assessment of Indirect and Cumulative*

Impacts and Impact Interactions' (1999) and the descriptive checklist approach, a two-step process was followed as set out below.

Step 1: Review of Residual Impacts

- 20.2.6 The primary focus was upon significant residual impacts, however, the potential for a combination of minor (non-significant) residual impacts to result in a significant cumulative impact on an identified resource or receptor has also been considered.
- 20.2.7 The significant residual impacts are identified in the individual topic assessments, as set out in **Chapters 8-18**.
- 20.2.8 Where there was potential for interaction with other topic areas and subsequent identification of potential combined effects at sensitive receptors, cumulative effects were considered. Where the same sensitive receptor has been identified, in relation to two or more individual topics, this receptor was considered further at Step 2.

Step 2: Consideration of Resultant Combined Effects

- 20.2.9 Consideration was then given to the potential for resultant combined effects during the construction and/ or operation of the Proposed Scheme. This focused on the potential sensitive receptors for combined effects identified in Step 1.
- 20.2.10 The relevant residual inter-topic effects were then grouped together, and the potential for significant combined effects upon the receptors was assessed. Supporting commentary is provided in the impact assessment in **section 20.4**. Professional judgement was used to determine whether or not the effects were considered to be significant.

Type 2 Cumulative Effects

- 20.2.11 The potential for cumulative impacts from the Proposed Scheme in combination with other reasonably foreseeable projects and developments (Type 2 cumulative effects) was carried out at two levels:
- Level 1: a high-level appraisal of potential inter-project (i.e. A9 Dualling Programme Projects) cumulative effects
 - Level 2: a high-level appraisal of potential cumulative effects with other reasonably foreseeable developments, within a 500m study area either side of the existing A9 (the selection of a 500m study area for the localised assessment was based on professional judgement, and was extended where necessary, on a case by case basis, to account for any notable developments just beyond the 500m study area)
- 20.2.12 A three-step process was undertaken to identify potential cumulative effects:

Step 1: Identification of 'Reasonably Foreseeable' Developments

- 20.2.13 In accordance with the DMRB, 'reasonably foreseeable' is interpreted to include other projects that are 'committed' including:
- Trunk road and motorway projects which have been confirmed (i.e. have been through the statutory processes). For the purpose of this assessment, this included consideration of projects that form part of the A9 Perth to Inverness Dualling Programme. Note however, that outwith material demand and waste issues, some A9 Projects can be

scoped out due to topographic separation and distance (for example Project 3 is unlikely to result in direct cumulative effects in combination with Project 8)

- Development projects with valid planning permissions as granted by the local planning authority, and for which formal EIA is a requirement or for which non-statutory EIA has been undertaken. This was also expanded where applicable to include developments in the planning system which have yet to be determined.

20.2.14 A review of other major developments beyond those that are ‘committed’ has also been undertaken to ascertain whether any should justifiably also be included in the assessment, by virtue of their scale, location or timing.

20.2.15 Following consultation with the relevant local planning authority/ authorities, a full list of developments to be considered in the Type 2 Cumulative Effects Assessment was prepared, as set out in **Appendix 20.1** (in **Volume 2**).

Step 2: Consideration of Potentially Significant Cumulative Effects from ‘Reasonably Foreseeable’ Projects

20.2.16 Once the full list of developments had been identified and agreed, professional judgement was used to ‘scope out’ any of the developments that were not considered likely to have in combination significant cumulative effects; for example, based on location, type of development, or development status. This allowed the assessment to focus on those that may potentially result in significant cumulative effects in combination with the Proposed Scheme.

Step 3: Assessment of Type 2 Cumulative Effects

20.2.17 A systematic, topic by topic, consideration of potential Type 2 cumulative effects was then carried out. Professional judgement was used to determine whether or not the effects were considered to be significant.

Limitations to Assessment

20.2.18 In the absence of detailed construction phasing information for all of the A9 Dualling projects, the Type 2 cumulative effects assessment relied upon extrapolation of information provided in the published Transport Scotland ‘Project Level Programme for Design and Development Work’ (Transport Scotland, 2014).

20.2.19 Local Development Plan land allocations were not considered within the Type 2 cumulative effects assessment unless part of live or consented planning applications.

20.2.20 It has not been possible to undertake a detailed quantitative assessment of the cumulative effects of the Proposed Scheme on material demand, waste and embodied carbon, as quantified information was not available, at the time of writing, across all A9 Dualling schemes.

20.3 Combined Impacts of the Scheme (Type 1)

20.3.1 The potential for combined impacts on one receptor/ resource has been assessed in relation to the topic-specific significant residual impacts identified in **Chapters 8-18**.

Step 1: Review of Residual Impacts

20.3.2 A small number of potential residual impacts have been predicted during the construction and operation of the Proposed Scheme, after the implementation of mitigation, as identified in **Chapters 8-18**. Other non-significant residual impacts have also been identified. All residual impacts with the potential for combined effects on individual receptors are set out in **Table 20-1**:

Table 20-1: *Likely Type 1 Cumulative Effects on Receptors by Topic*

Topic	Residual Significant Impacts with Potential for Interaction with Other topics	Sensitive Receptors with Potential for Combined Effects
Construction Phase Impacts		
People and Communities – Effects on All Travellers	The potential residual impact on Non-Motorised User (NMU) route NCN7 is considered to be Moderate/ Slight . This is due to closures of NCN7 and impacts on amenity to be experienced by NMUs	NCN 7 (NMU 1)
Visual	Potential Moderate Adverse residual impacts on views from NCN7 (NMU 1) where it meets the existing Dalwhinnie Junction	
Visual	Potential Moderate Adverse residual impacts on views from NCN7 (NMU 1) on the A889 (near where it meets the proposed Dalwhinnie Junction)	
People and Communities – Community and Private Assets	Community Severance at Cuaich resulting in potential Slight Adverse impacts	Cuaich
People and Communities – Community and Private Assets	Slight Adverse impacts on access to residential and commercial properties in Cuaich	
Visual	Potential Substantial Adverse visual impacts at Cuaich	
People and Communities – Community and Private Assets	Potential Slight Adverse impact relating to Community Severance at Dalwhinnie	Dalwhinnie
People and Communities – Community and Private Assets	Potential Slight Adverse impacts on Dalwhinnie in relation to access to residential and commercial properties	
Visual	Potential Moderate Adverse visual impacts on Dalwhinnie Garage	
Visual	Potential Moderate/ Slight (not significant) visual impacts on views from Dalwhinnie Distillery	
Operational Phase Impacts		
People and Communities – Community and Private Assets	Potential Slight Adverse impacts on Loch Ericht Hotel in terms of land lost to the Proposed Scheme	Loch Ericht Hotel
Visual	Potential Slight Adverse impacts on Loch Ericht Hotel in terms of views from this receptor	
Visual	Potential Slight Adverse Impacts on views from the Crubenmore Lodge	Crubenmore Lodge
Noise	Potential Slight Adverse noise impacts at Crubenmore Lodge	
Visual	Potential Slight Adverse impacts in terms of views from Dalwhinnie	Dalwhinnie
Noise	Potential Slight/ Moderate Adverse and Slight Adverse impacts on residential properties within Dalwhinnie	
Visual	Potential Slight Adverse impacts in terms of views from Cuaich	Cuaich
Noise	Potential Slight Adverse impacts on residential properties at Cuaich	

20.3.3 Two chapters, **Chapter 8**, and **Chapter 14**, reported potential significant adverse residual impacts at the operational stage, in relation to access to commercial land and sporting interests, and viewpoint receptors - existing A9 on-road representative views (from existing lay-bys). Significant Beneficial residual impacts are also predicted in terms of flood risk and the water environment. However, as these were not considered to have any potential for interaction with each other or with other topics, they have not been reported in **Table 20-1** above. No other chapters reported significant residual impacts at either the construction or operational stages.

Step 2: Consideration of Resultant Combined Effects

- 20.3.4 Of the potential residual impacts identified in **Table 20-1**, it can be seen that the construction phase of the Proposed Scheme has the potential to cumulatively affect users of NCN7 (NMU 1) at various points along the NMU route.
- 20.3.5 However, these potential impacts are those reported in relation to visual impacts and Effects on All Travellers. As the Effects on All Travellers chapter includes consideration of visual amenity impacts on NMUs, and given that the assessment of amenity already combines consideration of noise, air quality, visual amenity and journey length impacts, it is not necessary to further combine the reported visual impacts as additional cumulative effects (as it would effectively be double counting).
- 20.3.6 Upon review of the above listed receptors, it is considered that during construction, Cuaich will experience **Slight Adverse** impacts in terms of severance and access, and **Substantial** Impacts in terms of views from the settlement. However, the impacts on severance and access are not considered to be significant, as set out in **Chapter 8**, therefore, whilst the potential impact on views from Cuaich are predicted to be **Substantial Adverse**, overall there is not considered to be a significant cumulative effect.
- 20.3.7 It is considered that during the construction phase of the Proposed Scheme, potential adverse impacts are predicted on the village of Dalwhinnie in relation to community severance, access to residential and commercial properties and visual impacts on receptors within the village. However, as recorded in **Chapter 8**, the residual impacts are considered not to be significant. Although the identified potential impacts on views during the construction phase on one receptor is considered significant, views in relation to Dalwhinnie Distillery are not, and overall it is not considered that there will be significant cumulative effects on the village of Dalwhinnie.
- 20.3.8 Once the Proposed Scheme is operational, the potential effects on the Loch Ericht Hotel relating to land take and views from the property are predicted to be **Slight Adverse**. Upon review of these two potential impacts, it is not considered that they will result in a significant cumulative effect.
- 20.3.9 In terms of Crubenmore Lodge, once the Proposed Scheme is operational, the potential effects relating to noise and views from the property, which will be experienced, are both predicted to be **Slight Adverse**. It is not considered that the combination of these two slight impacts is cumulatively significant.
- 20.3.10 When the Proposed Scheme is operational, residential properties in Dalwhinnie will also be potentially subject to **Slight Adverse** impacts in terms of views and **Slight/ Moderate Adverse** and **Slight Adverse** impacts in terms of noise. It is not considered that the combination of these two slight impacts is cumulatively significant.
- 20.3.11 At the operational stage, the Proposed Scheme will result in potential **Minor Adverse** impacts in terms of noise and impacts on views at residential receptors within Cuaich. It is not considered that the combination of these two slight impacts is cumulatively significant.

20.3.12 It is therefore considered that there are no potential combined effects on any of the receptors identified in **Table 20-1**.

20.4 Combined Impacts of the Proposed Scheme in Combination with Other Reasonably Foreseeable Projects (Type 2)

20.4.1 The combined impacts of the Proposed Scheme in combination with other reasonably foreseeable projects has been assessed in relation to individual receptors and resources on a topic-specific basis.

Step 1: Identification of ‘Reasonably Foreseeable’ Developments

20.4.2 In the first instance, all trunk road and motorway projects, planning permissions, planning applications under consideration and sites allocated in LDP documents within the study area were identified following consultation with the Local Planning Authorities. The full list of projects can be found in **Appendix 20.1** (in **Volume 2**).

Step 2: Consideration of Potentially Significant Cumulative Effects from ‘Reasonably Foreseeable’ Projects

20.4.3 A number of developments from the full list in **Appendix 20.1 (Volume 2)** were ‘scoped out’ from further assessment. The developments not taken forward for consideration were generally planning applications that had not been subject to EIA.

20.4.4 The resulting list of reasonably foreseeable projects where it was considered necessary to consider potentially significant cumulative effects is set out in **Table 20-2**.

Table 20-2: List of Other Projects for Cumulative Impact Assessment

Ref No.	Development Name/ Location/ Application No.	Development Description	Development Status	Comments
Project 2	A9 dualling, Southern Section – Pass of Birnam to Tay Crossing	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation
Project 3	A9 dualling, Southern Section - Tay Crossing to Ballinluig	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 4	A9 dualling, Southern Section - Pitlochry to Killiecrankie	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 5	A9 dualling, Southern Section - Killiecrankie to Glen Garry (NB this is P5 and P6, which were combined into a single P5 area).	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 7	A9 dualling, Central Section – Glen Garry to Dalwhinnie	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 9	A9 dualling, Central Section - Crubenmore to Kincaig	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 11	A9 dualling, Northern Section - Dalraddy to Slochd	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation
Project 12	A9 dualling, Northern Section - Tomatin to Moy	Trunk road and motorway projects being designed prior to statutory processes	Construction 2019	Scheme in preparation – preferred route announced – EIA in preparation

20.4.5 No other developments were identified for inclusion in the assessment.

Step 3: Assessment of Type 2 Cumulative Effects

20.4.6 Based on all of the developments listed in **Table 20-2** above, **Table 20-3** summarises the assessment of likely Type 2 cumulative effects by topic. It should be noted that, in some instances, cumulative effects have not been predicted; this is largely due to the fact that the Proposed Scheme is separated from other reasonably foreseeable projects, physically or geographically, by topography or because existing dualled sections provide physical separation between projects.

Table 20-3: *Likely Significant Type 2 Cumulative Effects by Topic*

Topic	Potential Type 2 Cumulative Effects, Receptors and Significance	
	During construction	During operation
People and Communities Community and Private Assets	<p>The Highland estates affected by the Proposed Scheme (North Drumochter, South Drumochter (and its associated Secured Agricultural Tenancy, Ben Alder and Phoinies) also have land holdings within other A9 Dualling project extents and therefore may experience additional land-take and construction stage disruption/ disturbance to agricultural, forestry and sporting operations. Additionally, the Highland Main Line runs along other A9 Dualling project extents and may encounter some additional impacts on operations.</p> <p>Due to the differing stages of projects within the A9 Dualling Programme, these impacts have not yet been fully assessed and defined within a published Environmental Statement (ES).</p> <p>However, it is considered that strategic level phasing between A9 construction projects will manage cumulative impact risks on these land interests during construction. It is therefore assessed that cumulative effects would not be significant and would not affect likely future viability.</p>	
People and Communities Effects On All travellers	<p>NMU Routes</p> <p>Whilst the majority of NMU routes identified are project specific, the NCN7 spans the majority of the A9, from Ballinluig to Inverness.</p> <p>Its proximity to the road varies; notably the NCN7 runs very close to the A9 between Pitagowan and Dalwhinnie (Projects 6 to 8) and further north between Tomatin and Moy (Project 12).</p> <p>It is anticipated that in some locations the construction period for A9 Dualling Projects could overlap, and if in proximity, these could have similarly adverse disruption of access impacts to those predicted for the Proposed Scheme in relation to NCN7.</p> <p>Although it is anticipated there will be adverse impacts on the NCN7 during construction, the cumulative impact is not considered significant given the mitigation in place to provide continuity of this route during the construction phase.</p>	<p>NMU Routes</p> <p>Upon operation, there will be no significant cumulative impacts on NMU routes in proximity to the A9.</p> <p>The removal of all at-grade crossings and provision of underpasses means there will be beneficial cumulative effects on NMU safety across the route.</p> <p>Similarly, where possible, bus stops will be provided in proximity to communities with safe access across the A9 where required.</p> <p>Some areas of NCN7 will be locally diverted and upgraded with passing places to provide for shared vehicle use for A9 Sustainable Drainage Systems (SuDS) maintenance access.</p> <p>Upgraded lay-bys and parking facilities will be of benefit to NMU in terms of vehicle access to start/ end points linked to NCN7.</p> <p>It is therefore anticipated that, overall, there would be a beneficial cumulative impact in relation to NCN7.</p> <p>Within Project 8, NMU3, a hill wading route to Munro's Carn na Caim and A' Bhuidheanach Bheag, is currently accessed at ch.20,550; the Proposed Scheme includes for improved access via a southbound lay-by and local underpass crossing provision.</p> <p>At the northern extent of Project 7, Glen Garry to Dalwhinnie, there is a separate underpass and access track that also connects to NMU3, thereby providing a cumulative benefit for users of this route, however these effects are not considered to be significant.</p>

Topic	Potential Type 2 Cumulative Effects, Receptors and Significance	
	During construction	During operation
	<p>Vehicle Travellers – Views from the Road</p> <p>During construction, there are likely to be adverse effects on views from the road due to views of plant, bare earthworks, temporary signage/ structures/ SuDS, loss of roadside vegetation and areas for material storage, which could detract from the views of the surrounding high value scenery.</p> <p>It is anticipated that the construction period for A9 Dualling Projects will overlap in some places, however, it is considered that appropriate phasing of the dualling works would mean the cumulative effect is not significant.</p>	<p>Vehicle Travellers – Views from the Road</p> <p>Upon operation of the Proposed Scheme, in the long term (15-25 years), it is anticipated there will be some changes in views from the road.</p> <p>Around Dalwhinnie junction and Cuaich views may be slightly more restricted given winter resilience tree planting and additional native woodland screening.</p> <p>Given that each A9 project considers planting and screening in terms of views from sensitive receptors and views from the road, it is considered that there will be no significant cumulative effects arising from the Proposed Scheme in conjunction with other A9 Dualling Projects.</p>
	<p>Vehicle Travellers – Driver Stress</p> <p>It is anticipated that if Project 8 was to be constructed at the same time as adjacent dualling projects, there would be an adverse cumulative impact on driver stress during this time.</p> <p>This would be due to the likelihood of reduced speeds, lack of overtaking places and potential limited access to laybys during this time, all of which impact the main components of driver stress; traffic flows, speeds and frustration. However, it is considered that appropriate phasing of the dualling works would limit disruption and therefore it is not considered to be a significant cumulative impact.</p>	<p>Vehicle Travellers – Driver Stress</p> <p>In Project 8 there is considered to be a beneficial effect on driver stress, given the increase in overtaking opportunities, increased speeds and improved traffic flows upon operation of the Proposed Scheme.</p> <p>This effect will be similar across all A9 Dualling Projects, therefore there is considered to be a beneficial cumulative impact on driver stress. This is not anticipated to be significant.</p>
<p>Geology, Soils and Groundwater</p>	<p>It is considered unlikely that individual geology, soils or groundwater receptors within the Proposed Scheme extents will be affected by other reasonably foreseeable development or other projects in A9 Dualling Programme during construction; due to physical, topographical or hydrological separation and the inherent localised nature of impacts from individual construction activities which these are specific to.</p> <p>However, potential cumulative operational impacts identified as part of this assessment at a wider scale include the following:</p> <ul style="list-style-type: none"> • Incremental loss of soils of conservation interest, including carbon-rich soils and peat within the Cairngorms National Park; with associated functional or habitat fragmentation and loss • Incremental partial or greater disturbances to geodiversity features in the region • Incremental loss of groundwater dependent terrestrial ecosystems (GWDTE) <p>These potential impacts are particularly relevant to the Proposed Scheme when considered with Project 7 (Glen Garry to Dalwhinnie) and Project 9 (Crubenmore to Kincaig); which are known to have similar receptors present and may therefore have similar effects.</p> <p>However, as part of the design development process for each project these receptors have been avoided or minimised where practicable, and the specifics of any residual unavoidable constraints will have been assessed at project-level EIA, with appropriate mitigation identified where possible.</p> <p>Based on the above, assessment information available and using professional judgement, these potential cumulative effects are therefore expected to be minimal and are unlikely to be significant.</p>	

Topic	Potential Type 2 Cumulative Effects, Receptors and Significance	
	During construction	During operation
Road Drainage and the Water Environment	<p>It is considered that there will be beneficial cumulative effects relating to the water environment arising from the Proposed Scheme with other Reasonably Foreseeable A9 Dualling Projects.</p> <p>The provision of SuDS will provide significant beneficial effects significant beneficial effects to the water environment both in terms of water quality (through treatment) as well as flood risk (through storage), comparative to existing conditions.</p> <p>All new Proposed A9 Schemes projects are also designed to remain operational in a 1:200 flood event, so significant cumulative benefits across Perth to Inverness will be provided in a number of areas, e.g. business, emergency services.</p> <p>A Significant beneficial cumulative effect on the hydromorphology of the water environment across Schemes is facilitated by numerous improvements, e.g. the design of crossings that allows the natural evolution of river morphology and encourages sediment transfer, which will propagate downstream through the Spey catchments</p>	<p>It is considered that there will be long term beneficial cumulative effects relating to the water environment arising from the Proposed Scheme in conjunction other A9 Dualling projects.</p> <p>SuDS will provide betterment to the water environment both in terms of water quality (through runoff treatment) as well as flood risk (through attenuation and storage) compared to existing conditions.</p> <p>All A9 Dualling Projects are designed to remain operational in a 1:200 flood event, so potential cumulative benefits from Perth to Inverness will be provided in a number of areas, for example business and emergency services.</p> <p>A beneficial cumulative effect on the hydromorphology of the Spey catchment in proximity to A9 Projects is facilitated by the design of crossings that will allow the natural evolution of river morphology and encourage sediment transfer which will propagate downstream.</p>
Ecology and Nature Conservation	<p>Ecological permeability through the Proposed Scheme will be improved with the provision of mammal ledges within watercourse crossing to offer regular and safe crossing opportunities for protected species. In addition, natural bed material will be installed in watercourse crossings to promote natural river morphology processes and habitat for aquatic species. Each would result in a low beneficial residual effect for relevant species but not considered to be significant on their own merit. Improved permeability delivered across all A9 schemes could provide significant cumulative beneficial effect for mammals (e.g. otter/ badger/ wildcat/ deer) and freshwater fish (e.g. salmonids).</p> <p>Provision of SuDS within the road drainage network for the Proposed Scheme will ensure surface water run-off from the operational carriageway will be intercepted, and treated. This will reduce the potential risk of contaminants entering and damaging the water environment within the River Spey catchment. This would result in a low beneficial effect for relevant species but not considered to be significant on their own merit. Provision of SuDS across all A9 schemes could provide significant cumulative beneficial effect for wetland ecosystems and associated species.</p> <p>The Proposed Scheme will result in permanent loss of, and temporary disturbance to, notable habitats including but not limited to dry heath, wet heath and blanket bog. Given the proximity of protected sites and scale of potential habitat loss, the Proposed Scheme could result in a medium adverse residual effects for dry heath, wet heath and blanket bogs; although, the accompanying Outline Habitat Management Plan (see Appendix 12.11, ES Volume 2) details measures to reinstate temporarily disturbed habitats. All other A9 schemes will not result in a significant cumulative effect due to the topography, distance and limited hydrogeological connectivity to the affected habitats.</p>	
Landscape	<p>Given that they are immediately adjacent, construction of Projects 7 and 8 could have an adverse cumulative effect on the Drumochter Pass Landscape Character Area (LCA) and Glen Truim: Upper Glen and Dalwhinnie LCA as these span between the two projects, although the Drumochter Pass LCA will primarily be affected by Project 7.</p> <p>There will be cumulative effects at construction on Dail A' Chuirn Local Landscape Character Area (LLCA) and Tom a'Bhacain LLCA due to local tree losses and earthworks.</p> <p>Dail A' Chuirn LLCA spans between the two projects and Tom a'Bhacain is primarily in Project 8; however, given proximity and intervisibility there will likely be indirect cumulative effects upon this LLCA.</p> <p>Likewise, there will be cumulative effects on landscape features, including landform, vegetation, woodland, wildness, water and historic and cultural associations, as well as on the landscape experience from the A9.</p> <p>There will also likely be indirect cumulative effects on Dalnaspidal Forest LLCA and Southern Hill Slopes LLCA.</p>	<p>Cumulative effects from the Proposed Scheme in combination with Project 7 will reduce over time as a result of required mitigation at the project levels.</p> <p>The effects will continue to reduce as tree planting matures to screen views of new works from sensitive locations and receptors, and scrub, shrub, heath and other vegetation becomes established, in keeping with the respective LLCA characteristics, and will not be significant by Operation years 15-25.</p>

Topic	Potential Type 2 Cumulative Effects, Receptors and Significance	
	During construction	During operation
Visual	<p>Views from the road are considered under 'Effects on All Travellers' row above.</p> <p>It is anticipated that the construction periods for some A9 Dualling Projects could overlap in places; therefore, there would likely be adverse cumulative effects on users of the HML railway during the construction stage.</p> <p>Given their proximity, there will be intervisibility between Projects 7 and 8 from certain viewpoints (e.g. local Munro hillsides), if construction periods overlap, this could result in adverse cumulative visual effects.</p>	<p>Year 1 - there will be effects on the intervisibility and views from within Project 7 of the Proposed Scheme from:</p> <ul style="list-style-type: none"> the Hill track to A' Bhuidheanach the tie-in area at Lay-by 87 the summit of Leacainn to the east of Dalwhinnie <p>There will also be cumulative effects on intervisibility between the Proposed Scheme and Project 7 from the following points although they remain insignificant:</p> <ul style="list-style-type: none"> the hillslopes of Creagan Doire Dhonaich the track along Allt Beul an Sporain the hillslopes of Creagan Mor the NCN7 North of Drumochter Lodge <p>There will be cumulative effects on users of the HML railway; however, this will not be significant.</p> <p>Year 15-25 – intervisibility effects will have reduced due to the settling-in of mitigation, including vegetation growth, and weathering of materials and stonework.</p> <p>The combined effect will be that the road will largely look as it does now, with no significant residual cumulative effects from the locations noted.</p>
Cultural Heritage	<p>It is considered that there will be no significant cumulative effects arising from the Proposed Scheme, in conjunction with other A9 Dualling Projects, in relation to Cultural Heritage.</p> <p>Although there may be some discrete areas of the Genera Wade's Military Road and infrastructure removed as part of the A9 dualling, the cumulative effect on the Wade route as a whole is not considered to be significant.</p> <p>Although there will be minor removals and alterations, the historic routeway will still be understood as a separate routeway and as the historic routeway, a separate infrastructure to the A9.</p>	
Air Quality	<p>It is considered that there will be no significant cumulative effects arising from the Proposed Scheme, in conjunction with other A9 Dualling Projects, in relation to Air Quality</p>	
Noise and Vibration	<p>The construction programme for A9 Dualling Projects may result in overlaps between the construction of adjacent Projects 07 and 09 at the same time as the construction of Project 08.</p> <p>However, given the distances between receptors within the Project 08 study area to the construction areas for Projects 07 and 09, which are well in excess of 500m, there would not be expected to be any significant cumulative impacts from any concurrent construction activities.</p>	<p>This assessment of operational road traffic noise for Project 8, as presented in Chapter 17, is considered to be cumulative as the traffic data provided for assessment assumes that all schemes will open to traffic at the time of Project 8 opening.</p> <p>As such, no further cumulative assessment of road traffic noise is considered necessary.</p>
Materials	<p>Constructing the Proposed Scheme is likely to generate both concurrent and sequential cumulative environmental effects with regards to the generation of embodied carbon emissions, the depletion of natural resources and the generation of waste as a result of constructing Project 8 before, at the same time, or after, the other A9 Dualling Projects being progressed.</p> <p>When assessed in isolation, the environmental effects of constructing the Proposed Scheme have been determined to be non-significant from an EIA perspective.</p> <p>Based on professional judgement, the resultant combined cumulative effects of the Proposed Scheme with the other A9 Dualling Projects are considered to be locally or regionally significant within the study area, but unlikely to become issues at wider scales.</p> <p>Cumulative operational phase impacts have been scoped out of the Materials assessments.</p>	

20.4.7 Of the potential Type 2 cumulative effects identified in **Table 20-3**, a number of potential significant adverse cumulative effects have been identified during construction and operation. Mitigation, where required, for these adverse impacts is discussed in the section below.

20.4.8 Once the Proposed Scheme is complete, as identified in **Table 20-3**, there would be a beneficial cumulative impact in relation to users of NCN7. There are also predicted beneficial effects in

relation to ecology (species permeability) and the water environment, notably in relation to the provision of SuDS for discharge water quality and flood risk betterment compared to existing conditions; continued emergency access during flood events; and hydromorphology benefits, facilitated by the design of crossings that allow the natural evolution of river morphology and encourage sediment transfer, which will propagate downstream through the Spey catchment.

20.5 Mitigation and Residual Impacts

- 20.5.1 There are no residual effects identified in **Table 20-1**, which have the potential to give rise to significant adverse Type 1 cumulative effects, i.e. cumulative effects on individual receptors. No additional mitigation is therefore proposed.
- 20.5.2 Of the potential Type 2 cumulative effects identified in **Table 20-3**, some adverse construction phase cumulative effects have been identified. These principally relate to driver stress, landscape and visual impacts where the combined effects of Project 8 and Project 7 are predicted to be significant; and impacts on users of NCN7 and vehicle travellers, who might experience construction impacts in combination as they travel through the Project extents. As these effects are temporary and limited to the construction phase, no additional mitigation is considered necessary.
- 20.5.3 On completion of the Proposed Scheme, the landscape impacts for five LLCAs and one LCA will remain significant at operation year 1, potentially in combination with impacts arising from Project 7. However, as noted in **Table 20-3**, the effects will reduce with time as planted mitigation measures establish and soften both schemes into the surrounding landscape.
- 20.5.4 As explained in **Table 20-3** above, it is considered that in terms of the generation of embodied carbon emissions, the depletion of natural resources and the generation of waste, there is the potential for cumulative effects. However, it is also considered that the route-wide construction programme is likely to present opportunities for more effective materials management, through re-use of surplus materials between the Central Scheme (Glen Garry to Dalraddy) projects, and/or within the overall A9 Dualling Programme (subject to waste regulatory controls).

20.6 References

European Commission (May 1999), *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*.

Highways Agency at al. 'Glossary of terms used in DMRB Volume 11, Sections 1 and 2' (2008)

Transport Scotland 'Project Level Programme for Design and Development Work' (2014)

