

20 Cumulative Impacts

This chapter considers potential for cumulative impacts of the proposed scheme, and those of the proposed scheme in combination with committed developments and other major proposed development projects, including other projects forming part of the A9 dualling programme.

Potential for cumulative impacts due to the combined effect of a number of different environmental impacts of the proposed scheme on a single receptor/resource was assessed, based on the findings of the topic chapters in this ES. Six significant cumulative impacts were identified for Greengates, Faskally Cottage West, Littleton of Fonab, Balmore Cottages, Fonab Castle Hotel and Pitlochry Boating Station/Café.

The combination of projects forming the A9 dualling programme from Perth to Inverness was identified as having the potential to have a cumulative impact in terms of impacts on the River Tay catchment, land-take from the River Tay SAC, effects due to loss of woodland including areas on the Ancient Woodland Inventory (AWI), materials and waste management, long distance NMU routes, and land-take from land-holdings affected by multiple projects. In relation to loss of AWI and construction impacts on NCR7, significant cumulative impacts are likely. Further details of the expected impacts from other A9 dualling projects are required to confirm the level of this cumulative impact. It may be possible to mitigate potential construction impacts on NCR7 through coordination and refinement of the construction programmes of the A9 dualling projects but these are not known at this stage. The detailed design and construction programmes will continue to be considered at a strategic level by Transport Scotland and in future scheme assessments as more information becomes available.

No significant cumulative impacts as a result of the other A9 dualling projects are expected for the River Tay catchment, the River Tay SAC, land-holdings or materials and waste. Cumulative impacts due to changes in traffic volumes as a consequence of dualling the A9 from Perth to Inverness were incorporated into the relevant assessments reported in Chapters 8 to 19 of this ES and are not considered in this chapter.

No other cumulative impacts were identified in terms of the proposed scheme in combination with any other reasonably foreseeable project.

20.1 Introduction

20.1.1 European Commission guidelines (European Commission, 1999) define 'cumulative impacts' as follows:

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

20.1.2 DMRB HA218/08 (Highways Agency et al., 2008a) provides a glossary of technical terms, which expands on the above definition, noting that a cumulative impact may arise as the result of:

- 'a) the combined impact of a number of different environmental topic-specific impacts from the proposed scheme on a single receptor/resource; and*
- b) the combined impact of a number of different projects within the vicinity (in combination with the proposed scheme) on a single receptor/resource'.*

20.1.3 This chapter therefore includes consideration of both the impacts of the proposed scheme on receptors, and the impacts of other 'reasonably foreseeable' projects in line with the EC guidelines.

20.1.4 The assessments as reported in Chapters 8 to 19 of this ES have, where relevant, already taken into account the potential for cumulative impacts within a specific topic area as a result of a number of different activities affecting a single receptor. An example of this is Chapter 10 (Road Drainage and the Water Environment), which identified a single level of overall significance for each water feature, taking in account a number of different activities potentially affecting the same waterbody (such as bridge or culvert construction, installation of outfalls or realignment). This cumulative impact assessment references back to this approach, but does not aim to arbitrarily extract the cumulative element of these assessments.

20.1.5 Traffic modelling (TMfS14) has indicated that whilst individual A9 dualling projects are generally not likely to notably affect the traffic demand at a local level, the cumulative effect of full implementation of wider programme of A9 dualling works may be to increase traffic flows on the A9 by attracting

additional usage of this strategic route. To ensure that the potential cumulative impact of the proposed scheme in combination with other projects anticipated as part of the A9 dualling programme was taken into account, traffic data utilised in the EIA therefore include the traffic increase predicted as a consequence of implementing the full programme of works to dual the A9. As a consequence, potential cumulative environmental impacts of these traffic changes are incorporated within these assessments, and no supplementary assessment is required:

- Chapter 9 (People and Communities: All Travellers): non-motorised users such as pedestrians and cyclists and driver stress.
- Chapter 11 (Road Drainage and the Water Environment): water quality of receiving watercourses; and drainage design.
- Chapter 16 (Air Quality).
- Chapter 17 (Noise & Vibration).

20.2 Approach and Methods

General Approach

- 20.2.1 This chapter considers the following two categories of scenario to identify potential for significant cumulative impacts, based on the DMRB HA218/08 guidance:
- **Type 1 cumulative impacts:** the combined effect of a number of different environment topic-specific impacts arising as a result of the proposed scheme on a single sensitive receptor/resource; and
 - **Type 2 cumulative impacts:** the combined effects of the proposed scheme with other 'reasonably foreseeable' developments on a single sensitive receptor/resource.
- 20.2.2 Taking into account guidance provided within DMRB HA205/08 (Highways Agency et al., 2008b) 'reasonably foreseeable', in relation to Type 2 cumulative impacts was determined to include 'committed' projects, including:
- confirmed trunk road and motorway projects (i.e. gone through the statutory processes);
 - other relevant projects of the A9 dualling programme irrespective of their status; and
 - committed developments with consented, or yet to be determined, planning applications valid within the period 01 October 2014 and 30 September 2017 (i.e. within a three-year implementation timeframe, and for which formal EIA is a requirement or for which non-statutory EIA has been requested by the determining local authority to support the planning application).
- 20.2.3 The study area was defined as up to 500m from the proposed scheme for the purposes of initial identification of committed developments. However, a wider area search of additional projects that may contribute to a cumulative impact was then undertaken through review of planning information such as development plans (refer to Chapter 19: Policies and Plans), which included the projects of the A9 dualling programme.
- 20.2.4 Approved applications outwith the 01 October 2014 to 30 September 2017 period are either assumed to have lapsed or been completed, at which point they are assessed as existing land use. However, where consultation with landowners and the planning authority has confirmed the presence of a planning application outwith this period which is an extant consent (e.g. due to development being initiated but not completed), this was included in the assessment.
- 20.2.5 Further to the above, a review of other major developments beyond those that are 'committed' was also undertaken to ascertain whether any should justifiably be included in the assessment by virtue of their scale, location or timing.
- 20.2.6 Consultation was undertaken with the Environmental Steering Group (ESG), which includes the local authority Perth & Kinross Council (PKC), who were requested to confirm the committed developments proposed for inclusion in the cumulative assessment.

Identification of Cumulative Impacts

Type 1 Cumulative Impacts (of the proposed scheme)

- 20.2.7 To consider the potential for a combined effect of different environmental topic-specific impacts on a single receptor/resource, a review was undertaken of the topic-area environmental assessments undertaken as part of the EIA process, as reported in Chapters 8 to 19 of the ES.
- 20.2.8 The assessment paid particular attention to the impacts summarised in Chapter 22 (Summary of Significant Residual Impacts), which are those that are expected to remain as significant in the context of the EIA Regulations after application of any proposed mitigation, as these generally have the greatest potential to contribute to a significant cumulative impact. It is possible to have multiple significant residual impacts (as reported in the ES chapters for each environmental parameter) which in combination do not constitute an *additional* significant (cumulative) impact. However, it is also acknowledged that there is potential that multiple non-significant impacts in combination could result in a significant cumulative impact, and therefore residual impacts of Slight significance and above were reviewed, including non-significant residual impacts reported in the individual assessments of this ES. Impacts of negligible or neutral significance were excluded from the assessment as by definition they are inconsequential.
- 20.2.9 Impacts on cultural heritage assets and all travellers were not considered in the identification of Type 1 cumulative impacts, as the assessments in these chapters already take into account other environmental parameters when determining significance of impact. For example, to determine impacts on setting of cultural heritage assets the assessment takes into account proximity, land-take, landscape, visual and noise impacts. Similarly, for impacts on all travellers the assessment requires journey length changes and changes to amenity to be considered, which takes into account visual, air quality, and noise impacts.
- 20.2.1 The significance of Type 1 cumulative impacts was assessed through a three stage process:
- Stage 1 (Topic Areas): review of the residual impacts from the individual disciplines and, using professional judgement, identification of potential for interaction with other topic areas. For the proposed scheme visual, noise, community and private assets (land-take and revised access) were identified as having the potential to result in combined impacts. In addition, multiple impacts on the River Tummel (ecological receptors, geomorphology and flood risk) were also considered.
 - Stage 2 (Cumulative Impacts): cumulative impacts were identified where significant impacts were assessed in two or more disciplines. In addition, professional judgement was used to determine where multiple non-significant impacts (Slight or Slight/Moderate) combined to result in a cumulative impact.
 - Stage 3 (Significance of Cumulative Impacts): where cumulative impacts were identified, the nature of these combined impacts were considered e.g. duration (temporary or permanent), extent, frequency and sensitivity of the receptor, and the significance determined using professional judgement.

Type 2 Cumulative Impacts (of the proposed scheme with other developments)

- 20.2.2 To consider the combined impact of a number of different projects on a single receptor/resource in combination with the proposed scheme, the planning applications or permissions listed in Chapter 8 (People and Communities: Community and Private Assets) were reviewed. There is often little information available regarding these developments or likely timing, so professional judgement was used where necessary to qualitatively ascertain likelihood of environmental impacts on receptors that may also be affected by the proposed scheme. As noted, previously, this cumulative impact assessment also reviewed additional large-scale developments beyond the 500m study area to identify any that should be added to the assessment due to their scale, location or timing.
- 20.2.3 Professional judgement was used by EIA Specialists to identify potentially significant cumulative impacts, based on a review of all findings of this ES and available information regarding other committed developments, including those forming part of the A9 dualling programme.

Limitations to Assessment

- 20.2.4 The cumulative impact assessment has utilised available information on other likely developments, including the other projects of the A9 dualling programme from Perth to Inverness. However, this assessment has only been able to take account of currently available information, therefore the potential for cumulative impacts to occur due to subsequent A9 dualling projects at earlier stages of design development is identified in this assessment but cannot be quantified.

20.3 Potential Cumulative Impacts

Type 1 Cumulative Impacts (of the proposed scheme)

- 20.3.1 As noted in paragraph 20.1.4, for each environmental topic area as reported in Chapters 8 to 19 of this ES, the potential for a number of construction or operational impacts on the same receptor was considered where appropriate and is therefore not repeated here. The following paragraphs relate to potential combinations of environmental topic area impacts on specific areas/receptors.
- 20.3.2 Following implementation of mitigation, there are comparatively few significant residual impacts (Chapter 22: Summary of Residual Significant Impacts) for a large scale development of this type in a sensitive area. This is due to the fact that the proposed scheme is largely online widening, which limits the area of land required and also means that the baseline conditions already include the existing A9 trunk road. There is a section of offline widening north of Loch Faskally, however, the footprint in this area has been limited as much as possible and the existing A9 has been incorporated into the proposed scheme.

Construction

- 20.3.3 Chapter 5 (The Proposed Scheme) and Appendix A5.1 (Construction Information) provides information regarding the timing/programming and type of construction activities anticipated at present. The precise details of these will be dictated by the Contractor(s) detailed design and construction methodology.
- 20.3.4 During construction, those properties closest to the works may be subject to several types of temporary disturbance such as changes to visual amenity, noise and vibration, dust and access to/from properties. Properties within 100m of the indicative land made available (LMA) are identified in Appendix A17.7 (Additional Construction Noise Assessment). Mitigation is proposed in the relevant chapters to mitigate potential impacts during construction. Key controls to facilitate implementation of this mitigation will be the Construction Environmental Management Plan (CEMP) and community liaison strategy, both of which are required by mitigation measures set out in Chapter 22 (Schedule of Environmental Commitments) (**Mitigation Item SMC-S1** and **Mitigation Item SMC-S3**, respectively).
- 20.3.5 Following mitigation, it is anticipated that any potentially significant adverse construction impacts in relation to air quality and noise vibration are unlikely to arise and any that do would be short-term in nature. People's views at approximately 24 built receptor and 16 outdoor receptor locations are assessed to be significant (Chapter 14: Visual) following the implementation of mitigation. In relation to access to/from properties construction and operation impacts have been assessed together as impacts on community and private assets are expected to be similar during both construction and operational phases of the proposed scheme. Operational impacts on community and private assets are discussed in paragraphs 20.3.5-20.3.9. Visual amenity on outdoor receptors is considered in Chapter 9 (People and Communities – All Travellers).
- 20.3.6 Taking into account the above, residual impacts identified in this ES are not, in combination, considered to constitute an additional cumulative significant impact on any receptor during construction.

Operation

- 20.3.7 The review of the findings of each topic area identified a number of receptors that would be subject to a range of residual impacts that could, in combination, potentially contribute to a Type 1 cumulative impact during operation of the proposed scheme.

20.3.8 Receptors potentially affected by cumulative impacts during operation are set out in Table 20.1, all of which are people/property receptors, with the exception of the River Tummel. Whilst there are other properties along the route of the proposed scheme that may experience some degree of environmental impact, those likely to have the greatest potential for overall cumulative impacts are set out in Table 20.1. Six of these are considered to represent significant cumulative impacts.

Table 20.1: Cumulative Impacts of the Proposed Scheme (Type 1)

Receptor	Description of Individual Impacts	Cumulative Impact
River Tummel	<ul style="list-style-type: none"> Residual adverse impacts of Moderate significance were assessed for the River Tummel due to localised increases in the fluvial flood depth from the 0.5% AEP (200-year) plus CC event on agricultural land, which is not deemed sensitive to increased flood depths. In addition, residual beneficial impacts of Large significance were noted for the River Tummel due to decreases in the fluvial flood depth to residential properties from the 0.5% AEP (200-year) plus CC event. Overall, the net effect of the proposed scheme on flood risk is considered to be beneficial. Non-significant geomorphological changes due to construction of outfalls and bridge structures (Chapter 11: Road Drainage and the Water Environment). Non-significant residual impacts on water quality for the proposed drainage outfalls. In addition to beneficial impacts for water features currently receiving routine runoff from the existing A9, but not included within the drainage design for the proposed scheme. Non-significant habitat disturbance, habitat loss and pollution risk (Chapter 12: Ecology & Nature Conservation). Non-significant permanent loss of habitat including areas within the River Tay SAC designation (Chapter 12: Ecology & Nature Conservation). 	Not significant
Greengates (comprising two residential properties and one parcel of woodland)	<ul style="list-style-type: none"> Partial loss of woodland (0.86ha) and impacts on the amenity of the land holding, assessed as Moderate/Substantial significance (Chapter 8: People and Communities - Community and Private Assets). Significant noise increases at ground floor and first floor level during daytime. These increases are as a result of the traffic flow changes on the side roads (B8019 and A924) (Chapter 17: Noise and Vibration). Temporary construction impacts due to proximity to the proposed scheme. 	Significant
Faskally Cottage West	<ul style="list-style-type: none"> Partial loss of garden (0.03ha) from Pitlochry North Rail Underbridge, including associated wingwall, of Moderate/Substantial significance (Chapter 8: People and Communities - Community and Private Assets). Significant visual changes (Substantial in WYO and Substantial SY15) which are only partially mitigated through seeding and planting (Chapter 14: Visual). Non-significant increases in noise at ground floor and first floor levels (Appendix A17.3: Predicted Noise Levels). Temporary construction impacts due to proximity to the proposed scheme. 	Significant
Littleton of Fonab	<ul style="list-style-type: none"> Direct access stopped up and an alternative left-in, left-out access provided resulting in additional journey distance for residents when travelling north (1.4km) and south (1.8km) of Moderate significance (Chapter 8: People and Communities - Community and Private Assets). Significant visual changes (Substantial in WYO and Moderate SY15) that are only partly mitigated by woodland planting (Chapter 14: Visual). Non-significant increases in noise at ground floor and first floor levels during the daytime (Chapter 17: Noise and Vibration). Temporary construction impacts due to proximity to the proposed scheme. 	Significant
Balmore Cottages	<ul style="list-style-type: none"> Direct access stopped up and an alternative left-in, left-out access provided resulting in additional journey distance for residents when travelling north (3.7km) of Moderate significance (Chapter 8: People and Communities - Community and Private Assets). Significant visual changes (Substantial in WYO and Moderate/Substantial SY15) which are only partially mitigated through seeding and planting (Chapter 14: Visual). Reduction in noise levels at ground floor and first floor levels (Appendix A17.3: Predicted Noise Levels). Temporary construction impacts due to proximity to the proposed scheme. 	Significant
Fonab Castle Hotel	<ul style="list-style-type: none"> Partial loss of access road and amenity grassland (0.28ha) of Slight/Moderate significance (Chapter 8: People and Communities - Community and Private Assets). Direct access to existing A9 changed to left-in, left-out junction, resulting in additional journey distance for employees and customers when travelling north (1.5km) of Moderate significance (Chapter 8: People and Communities - Community and Private Assets). Visual changes of Moderate significance during WYO which are reduced to Slight significance (SY15) through the implementation of seeding and planting (Chapter 14: 	Significant

Receptor	Description of Individual Impacts	Cumulative Impact
	Visual <ul style="list-style-type: none"> • Non-significant increases in noise at ground floor and first floor levels (Appendix A17.3: Predicted Noise Levels). • Temporary construction impacts due to proximity to the proposed scheme. 	
Pitlochry Boating Station and Café	<ul style="list-style-type: none"> • Visual changes of Moderate/Substantial significance during WYO which are reduced to Slight/Moderate significance (SY15) through the implementation of seeding and planting (Chapter 14: Visual). • Non-significant increases in noise at ground floor and first floor levels (Appendix A17.3: Predicted Noise Levels). • Significant adverse impact on business viability during construction. 	Significant

*WYO denotes the winter of the year of opening (when the proposed planting has been implemented but has not established) as reported in Chapter 14 (Visual).

**SY15 denotes summer 15 years after opening (when the proposed planting would be reasonably established as reported in Chapter 14 (Visual)).

- 20.3.9 As noted in Table 20.1 there are localised journey length increases as a result of removing at-grade junctions on the existing A9. As outlined in Chapter 2 (Need for the Scheme), having all movement grade separated junctions mitigates the need for potentially dangerous right turns across the path of traffic travelling in opposite direction which will improve safety for motorised and non-motorised users.
- 20.3.10 Potential for cumulative impacts in the context of the River Tay SAC has been considered in Chapter 12 (Ecology and Nature Conservation) and also as part of a Habitat Regulations Appraisal (HRA) (Jacobs, 2017a) under the requirements of the EC Habitat Directive. This considered a range of impacts and determined that there would be no adverse effects on the conservation objectives of the River Tay SAC as a result of the proposed scheme.

Type 2 Cumulative Impacts (Other Developments)

- 20.3.11 As noted in Section 20.2 (Approach and Methods), the wider A9 dualling programme from Perth to Inverness was included in the cumulative impact assessment. The A9 dualling programme comprises upgrade to 11 sections of the A9 between Perth and Inverness, as listed in Chapter 1 (Introduction) and shown on Figure 1.1.
- 20.3.12 Other reasonably foreseeable developments in the vicinity of the proposed scheme include a number of planning applications as shown on Figure 8.1. None of the planning applications are EIA developments, however, it is expected that the planning application due to follow the current Pre-Application Notice (Ref: 15/00011/PAN) for the residential development on 'Land 300 Metres South East of Middleton of Fonab Cottages, Foss Road (PA08)' would require an environmental assessment. It is noted in the Development Management Committee report (15 July 2015) that the key issues against which a future application is likely to be assessed include: landscape and visual; scale, design and layout; relationship to nearby land uses; historic environment and cultural heritage; natural heritage; ecology; water resources and soils, noise; air quality (including dust); waste; transport implications and the economy. There is potential for this future planning application to contribute towards cumulative impacts with the proposed scheme. However, due to its stage of development this is likely to be assessed within the planning application for residential development when it is submitted.
- 20.3.13 No other committed developments shown on Figure 8.1 are considered to have potential cumulative impacts with the proposed scheme.

Construction

- 20.3.14 The A9 dualling construction programme and phasing of individual projects is not yet known, however majority of the A9 programme is anticipated to be constructed from 2019 to 2025, with individual projects typically taking 1.5 to 2.5 years to complete, depending on size and complexity.
- 20.3.15 Construction impacts generally occur in a localised area in the vicinity of particular construction activities (e.g. earthwork excavations, foundation piling, or formation of road pavement). As such, whilst there is currently limited information regarding construction, it is unlikely that individual receptors

will be affected by multiple projects, due to their geographical separation. Potential Type 2 cumulative construction impacts identified in this assessment comprise the following:

- impacts on people/property receptors (noise and vibration, air quality and visual receptors);
- materials and waste;
- the River Tay catchment;
- the River Tay SAC designation; and
- impacts on long-distance NMU routes.

People/Property Receptors

20.3.16 The assessment of potential for Type 2 cumulative impacts on receptors sensitive to air quality, noise and vibration and visual impacts is summarised in Table 20.2.

Table 20.2: Cumulative construction impacts of other developments (Type 2) on people/property receptors

Project Name		Details	Cumulative Impact
A9 Dualling Programme	Project 01: Luncarty to Pass of Birnam*	Already consented, with construction scheduled to commence in 2018. Project 01 will be completed prior to commencement of the proposed scheme. No cumulative impacts identified.	None
	Project 02: Pass of Birnam to Tay Crossing	Construction timing not confirmed, but northern extent of Project 02 is approximately 13km south of the start of the proposed scheme and the same receptors are unlikely to be affected.	Not significant
	Project 03: Pass of Birnam to Tay Crossing	Construction timing not confirmed, but northern extent of Project 03 is approximately 5km south of the start of the proposed scheme and the same receptors are unlikely to be affected.	Not Significant
	Project 05: Killiecrankie to Glen Garry	Construction timing not confirmed, but southern extent of Project 05 is approximately 2km north of the start of the proposed scheme and the same receptors are unlikely to be affected.	Not Significant
	Project 07: Glen Garry to Dalwhinnie	Construction timing not confirmed, but the southern extent of Project 07 is approximately 40km north of the proposed scheme.	Not Significant
	Project 08: Dalwhinnie to Crubenmore	Construction timing not confirmed, but the southern extent of Project 07 is approximately >50km north of the proposed scheme.	Not Significant
	Project 09: Crubenmore to Kincaig	Construction timing not confirmed, but the southern extent of Project 07 is approximately >50km north of the proposed scheme.	Not Significant
	Project 10: Kincaig to Dalraddy	Already consented, with construction completed in 2017. Project 10 has been completed prior to commencement of the proposed scheme. No cumulative impacts identified.	None
	Project 11: Dalraddy to Slochd	Construction timing not confirmed, but the southern extent of Project 11 is >50km north of the proposed scheme.	Not Significant
	Project 12: Tomatin to Moy	Construction timing not confirmed, but the southern extent of Project 12 is >50km north of the proposed scheme.	Not Significant

*Cumulative impacts are also not considered likely if Project 01 construction programme timing were to change such that completion partially overlapped with commencement of construction for the proposed scheme. This is due to a separation of approximately 30km between the projects, and it therefore being unlikely that the same receptors would be affected.

Materials and Waste

20.3.17 Data available to inform the EIA (Chapter 18: Materials) suggest that within The Highland Council and TAYPlan areas there is sufficient capacity to supply high quality aggregate material for the proposed scheme. However, taking into account the other A9 dualling projects which are also likely to require locally sourced aggregate material, there is likely to be high demand for materials relative to local availability.

20.3.18 It is anticipated that a high proportion of the excavated material from the A9 dualling projects would be suitable for reuse on-site as engineering fill and would be modified/processed as required to meet specification requirements. However, some earthworks materials along with other aggregates for structures, drainage and road pavement construction are expected to be imported and the quantities of these will vary between the different projects.

20.3.19 There is scope for recycling and reuse of construction waste from the A9 dualling projects, but the quantity achievable will be dependent on the Contractor, and therefore cannot be determined at this stage. However, the construction sector seeks to recycle and reuse construction waste in response to legislative, fiscal and policy drivers, as well as cost minimisation, which would result in a likely reduction in the quantity of material that would leave site.

20.3.20 At this stage, material use and waste generation estimates are not available for all A9 dualling projects. However, allowing for intended re-use and availability of material from both local and non-local sources, it is considered that this can be appropriately managed within projects and across the A9 dualling programme and therefore impacts on waste and materials are unlikely to be significant.

River Tay Catchment

20.3.21 The proposed scheme is located within the River Tay catchment, which also includes the following A9 dualling projects: P01 (Luncarty to Pass of Birnam), P02 (Pass of Birnam to Tay Crossing), P03 (Pass of Birnam to Tay Crossing) and P05 (Killiecrankie to Glen Garry).

20.3.22 No significant construction residual impacts are expected for the proposed scheme in relation to water quality and fluvial geomorphology for any water features within the study area. Therefore, no cumulative impacts with other A9 dualling projects are expected for the River Tay catchment in relation to water quality or fluvial geomorphological processes.

20.3.23 There is expected to be a significant (Moderate) impact during construction for the River Tummel (WF70) due to the inherent risks associated with the requirement to locate temporary structures within the functional floodplain during the construction of the new Tummel Crossing. However, this impact is considered to be localised and temporary and as such no significant cumulative impact is expected on the River Tay catchment.

River Tay SAC

20.3.24 A detailed consideration of the potential effects on European sites; the River Tay SAC, in the context of The Conservation (Natural Habitats, & c.) Regulations 1994 (referred to as the Habitat Regulations), has been undertaken in an HRA for the proposed scheme which considers construction and operational impacts of the proposed scheme on the River Tay SAC in-combination with other reasonably foreseeable projects. The outcome is summarised under consideration of operational Type 2 cumulative impacts (paragraphs 20.3.28-20.3.37).

Long Distance Routes

20.3.25 There are a several long distance routes in the vicinity of the existing A9, and these were considered in terms of potential for cumulative impacts to occur due to proximity to different sections (projects) of the A9 forming part of the A9 dualling programme. Within the proposed scheme study area long distance routes include the Rob Roy Way and National Cycle Route (NCR) 7 and NCR77. No impacts are anticipated on the Rob Roy Way from any other A9 dualling projects and therefore cumulative impacts are not considered further on this long distance route.

20.3.26 There are residual impacts anticipated during construction on NCR7 from the proposed scheme. In relation to the other A9 dualling schemes Project 05 (Killiecrankie to Glen Garry) is expected to result in a significant residual construction impact on the amenity value of NCR7 north of Calvine. There is also potential for significant cumulative construction impacts on amenity value, as well as, potential temporary diversions of NCR7 arising from A9 dualling Project 07 (Glen Garry to Dalwhinnie), Project 09 (Crubenmore to Kincaig), Project 11 (Dalraddy to Slochd) and Project 12 (Tomatin to Moy) where there is the potential for minor realignments of NCR7. It may be possible to mitigate these impacts through coordination and refinement of the construction programmes of the A9 dualling projects but these are not known at this stage.

20.3.27 In relation to NCR77, there is potential for cumulative impacts with Project 02 (Pass of Birnam to Tay Crossing) as a realignment of NCR77 is anticipated as a result of Project 02. However, as the impact on NCR77 from the proposed scheme is not significant the resulting cumulative impact is not expected

to be significant. On the basis that Project 02 is still undergoing DMRB Stage 2, it is also considered unlikely that the construction programmes would overlap.

Operation

20.3.28 Potential Type 2 cumulative operational impacts identified in this assessment comprise the following:

- impacts on the River Tay catchment;
- impacts on the River Tay SAC designation;
- woodland loss (in particular AWI areas);
- land-take from land holdings which are present within multiple project boundaries; and
- impacts on long-distance NMU routes from multiple projects.

River Tay Catchment

20.3.29 During operation, there is expected to be a net beneficial impact on flood risk (flood risk to residential properties has been reduced at the expense of localised increases in flood depths on agricultural land), with any impacts being localised and not expected to extend beyond the boundary of the proposed scheme. Furthermore, for water features currently receiving routine runoff from the existing A9 that are included within the drainage design for the proposed scheme, beneficial impacts are anticipated. Therefore, it is anticipated that there would be no potential adverse cumulative impacts on the River Tay catchment area from operation of the proposed scheme.

River Tay SAC

20.3.30 The HRA in-combination assessment (Jacobs, 2017a) reports that there would be a *de minimis* effect on the River Tay SAC during operation as a result of SAC land-take from the proposed scheme and two other A9 dualling projects. The assessment of this for the proposed scheme in relation to cumulative impacts is detailed in Table 20.3.

Table 20.3: Cumulative impacts (Type 2) - HRA in-combination assessment

Project Name		Details	Cumulative Impact
A9 Dualling Projects	Project 01: Luncarty to Pass of Birnam	The Luncarty to Pass of Birnam HRA (Jacobs, 2014) identified short-term <i>de minimis</i> effects on the River Tay SAC as a result of construction activities, and permanent <i>de minimis</i> effects as a result of small-scale hydrological changes and a small direct loss of SAC habitat from culvert extensions. Any cumulative effect due to construction activities is considered to be unlikely as Project 01 will be completed prior to commencement of the proposed scheme. No cumulative operational impacts are expected as areas of land-take are not considered to be ecologically important to the qualifying interests of the SAC and therefore are not likely to result in implications for the conservation objectives of the site.	None
	Project 05: Killiecrankie to Glen Garry	The Killiecrankie to Glen Garry HRA (Jacobs, 2017b) identifies that the operational phase of the Killiecrankie to Glen Garry section of the A9 would result in a <i>de minimis</i> effect as a result of SAC land-take. No cumulative operational impacts are expected as areas of land-take are not considered to be ecologically important to the qualifying interests of the SAC and therefore are not likely to result in implications for the conservation objectives of the site.	None

20.3.31 The HRA recommends that the in-combination assessment against projects of the A9 dualling programme is re-determined as detailed design progresses and project level HRAs become available. This will ensure that there continues to be no potential for any adverse effects on site integrity for the the River Tay SAC.

Woodland Loss

- 20.3.32 As part of the iterative design process for each of the A9 dualling projects, loss of areas of woodland has been avoided or reduced, for example by refining the road alignment or using retaining walls to reduce earthworks extents. However, as much of the A9 runs through areas with numerous environmental constraints, removal of existing woodland is necessary on each of the A9 dualling projects. In line with Scottish Government policy, each project has aimed to replant areas of woodland to achieve no overall loss (i.e. 1:1 replacement). Woodland connectivity has also been considered at a project and programme level to ensure that this is maintained or enhanced.
- 20.3.33 Proposed replacement planting can mitigate woodland loss, and as tree cover becomes established the woodland functionality will develop and currently fragmented woodland areas will be connected to reduce existing fragmentation. However, AWI has a particularly high intrinsic value due to its age, which means it is not readily replaceable, and for this reason AWI loss remains a significant residual impact of the proposed scheme. Given an expectation of similar residual impacts on other A9 projects, it is considered that this will constitute a significant cumulative impact for the A9 dualling programme.

Land-take from Land-holdings

- 20.3.34 Where land-holdings are present within multiple project boundaries there is a potential for a cumulative impact from the A9 dualling projects. The assessment of this for the proposed scheme is detailed in Table 20.4.

Table 20.4: Cumulative operational impacts (Type 2) –land-take

Project Name	Details	Cumulative Impact
A9 Dualling Project 02: Pass of Birnam to Tay Crossing	Forestry Commission is likely to be affected by Project 02 and also has land holdings which will lose land to the proposed scheme. Therefore, they may experience additional land-take and disturbance to forestry operations. 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 ES. However, based on the cross-project baseline and assessment information currently available and using professional judgement, it is assessed that the cumulative impact on this land interest would not be significant in the context of the EIA Regulations.	Not Significant

Long-distance NMU routes

- 20.3.35 There are a several long distance routes in the vicinity of the existing A9, and these were considered in terms of potential for cumulative impacts to occur due to proximity to different sections (projects) of the A9 forming part of the A9 dualling programme. The proposed scheme has residual impacts on two long distance routes that are also likely to be affected by other sections of A9 dualling; NCR7 and NCR77. It should be noted that within the study area for the proposed scheme NCR7 and NCR77 share the same route.
- 20.3.36 The proposed scheme will result in Slight (NCR7) and Negligible/Slight (NCR77) impacts on amenity due to views of the proposed scheme along the routes. In addition to the proposed scheme, these long distance routes are present within the study area of the other A9 dualling projects as listed in Table 20.5.

Table 20.5: Cumulative operational impacts (Type 2) – long distance NMU routes

Project Name		Summary of NMU Impacts
A9 Dualling Projects	Project 01: Luncarty to Pass of Birnam	NCR77: Scheme under construction. ES for the project predicts that NCR77 will be unaffected.
	Project 02: Pass of Birnam to Tay Crossing	NCR77: Scheme undergoing DMRB Stage 2 and a preferred route is still to be identified, however, realignment of NCR77 is anticipated to be likely under all options being considered.
	Project 03: Tay Crossing to Ballinluig	NCR77: Slight residual impacts on amenity are predicted for users of NCR7 due to views of the proposed scheme along the route.
	Project 05: Killiecrankie to Glen Garry	NCR7: Slight residual impacts on amenity are predicted for users of NCR7 due to views of the proposed scheme along the route.
	Project 07: Glen Garry to Dalwhinnie	NCR7: Potential for minor realignment and impacts on amenity depending on traffic changes along A889. No at-grade crossing of existing A9.
	Project 08: Dalwhinnie to Crubenmore	NCR7: Potential for impacts on amenity for users of NCR7 depending on changes in traffic along A889 and General Wade's Military Road between Dalwhinnie and Crubenmore Junction. No at-grade crossing of existing A9.
	Project 09: Crubenmore to Kincaig	NCR7: Potential for impacts on amenity for users of NCR7 due to new grade-separated junction arrangement at Newtonmore, and changes in traffic along B9150. Unlikely to result in significant changes to journey length though minor realignment may be required. No at-grade crossing of existing A9.
	Project 10: Kincaig to Dalraddy	NCR7: Scheme construction completed in 2017. ES for the project predicts that NCR7 will be unaffected.
	Project 11: Dalraddy to Slochd	NCR7: Potential for impacts on NCR7 towards Slochd depending on junction arrangement and traffic changes along A938. No at-grade crossing of existing A9.
	Project 12: Tomatin to Moy	NCR7: Potential for minor realignment but unlikely to result in significant changes to journey length. Potential impacts on amenity for users of NCR7 depending on changes in traffic along B9154. Existing at-grade crossing of A9 which would require mitigation.

20.3.37 Potential impacts on NCR7 and NCR77 are mitigated as part of the proposed scheme through design development and/or requirements stated in Chapter 9 (People and Communities - All Travellers) and Chapter 13 (Landscape), including mitigation relating to amenity value (such as landscape planting). Whilst the full design and mitigation detail of all A9 projects is not yet available, it is anticipated that impacts along other sections of NCR7 and NCR77 can be similarly mitigated at a local scale, and that there will be no significant cumulative impact.

20.4 Conclusions

20.4.1 Significant cumulative impacts are expected as a result of the proposed scheme (Type 1 impacts) for Greengates, Faskally Cottage West, Littleton of Fonab, Balmore Cottages, Fonab Castle Hotel and the Pitlochry Boating Station and Café.

20.4.2 At Greengates this is predominately as a result of the loss of woodland combined with significant noise increases at the property. At Faskally Cottage West this is predominantly as a result of the loss of garden and visual impacts associated with Pitlochry North Rail Underbridge, including associated wingwall. At Littleton of Fonab this is predominantly as a result of changes to access for residents when travelling both north and south and the significant visual impacts which are only partly mitigated by woodland planting. At Balmore Cottages the impact is considered significant predominately as a result of changes in access for residents when travelling north and the significant visual impacts which are only partially mitigated through seeding and planting. At Fonab Castle Hotel and the Pitlochry Boating Station and Café, the residual significance is predominantly due to the visual impacts lasting 15 years before the mitigation becomes effective and reduces the impacts.

20.4.3 A number of potential cumulative impacts of the proposed scheme in combination with other developments (Type 2 impacts) were identified, of which one is considered potentially significant; loss of AWI, as although compensation planting is proposed, this will not mitigate for the permanent loss of existing biodiversity.

20.4.4 It is acknowledged that depending on the detailed design for the remaining dualled sections of the A9, additional cumulative impacts are possible. Conversely, it may be possible to mitigate such impacts on

NCR7 through coordination and refinement of the construction programmes of the A9 dualling projects, but these are not known at this stage. The detailed design and construction programmes will continue to be considered at a strategic level by Transport Scotland and in future scheme assessments as more information becomes available.

20.5 References

Atkins (2013). A9 Dualling Programme: Kincaig to Dalraddy, Environmental Statement.

European Commission (1999). Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, May 1999. Quoted in Highways Agency et al. (2008a).

Forestry Commission Scotland (2009). The Scottish Government's Policy on Control of Woodland Removal.

Forestry Commission Scotland (2015). Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal.

Jacobs (2014). A9 Dualling: Luncarty to Pass of Birnam, Habitats Regulations Appraisal.

Jacobs (2017a). A9 Dualling: Pitlochry to Killiecrankie. Habitat Regulations Appraisal.

Jacobs (2017b). A9 Dualling: Killiecrankie to Glen Garry. Habitat Regulations Appraisal.

Highways Agency, Scottish Government, Welsh Assembly Government and the Department of Regional Development for Northern Ireland (2008a). DMRB Volume 11, Section 2, Part 7: Glossary of Terms Used in The Design Manual for Roads and Bridges Volume 11 Sections 1 and 2, August 2008.

Highways Agency, Scottish Government, Welsh Assembly Government and Department for Regional Development Northern Ireland (2008b). DMRB Volume 11, Section 2, Part 5 HA205/08: Assessment and Management of Environmental Effects, August 2008.