54 Whole Scheme Cumulative Impact Assessment

This chapter provides an overview of the potential cumulative impacts arising from the combined effects of the three component parts of the AWPR, i.e., Northern Leg, Southern Leg and Fastlink. It also addresses the cumulation of impacts of the proposed scheme and those from other proposed major developments in the area. Cumulative air quality impacts are reported in Chapter 55, owing to the technical and detailed nature of the assessment.

The assessment indicated that significant adverse cumulative effects are possible on agriculture and commercial forestry, geomorphology, landscape and access. Disruption due to construction may also have a cumulative effect over the whole scheme.Successful implementation of mitigation will be required to reduce the risk of significant cumulative impacts on ecology. Cumulative visual impacts may be signficant for outdoor receptors, but likely to be beneficial for users of the proposed scheme. Noise impacts over the wider area will be beneficial.

Future development has the potential to create significant cumulative impacts on agricultural land use, ecology, landscape, noise and access.

54.1 Introduction

54.1.1 As set out in Chapter 52, owing to the size of the proposed scheme, the Environmental Statement reports separately on the impacts relating to the Northern Leg, Southern Leg, and Fastlink. In order to illustrate the combined impacts of the entire scheme, this chapter describes the potential cumulative impacts of the scheme's three component parts.

54.1.2 This chapter also addresses the cumulation of impacts of the proposed scheme and those from other proposed major developments in the area. Consideration of different types of impact on the same local area is addressed through cross referencing throughout the main report, and a summary of cumulative impacts at selected locations is provided in Chapter 57 (Site-specific Cumulative Impact Assessment).

54.2 Approach and Methods

54.2.1 A qualitative assessment of the impact of the proposed scheme on all environmental parameters was undertaken with reference to guidance in the Design Manual for Roads and Bridges (DMRB) Volume 11, and Interim Advice Note 81/06 (Highways Agency).

54.2.2 This chapter describes the potential impacts on a regional scale which could arise from the:

- entire proposed scheme incorporating the Northern Leg, Southern Leg and Fastlink; and
- proposed scheme together with all relevant future major development.

54.2.3 Where appropriate, the envisaged cumulative impacts are evaluated in terms of significant/not significant. Mitigation to specifically address cumulative impacts is described in Chapter 56 (Mitigation).

Major Developments

54.2.4 The following guidance and policy documents were used as a basis to define 'major development' for the purposes of this cumulative impact assessment (CIA):

- SPP17: Planning for Transport (Scottish Executive, August 2005):
  - Paragraph 67 provides a set of criteria to identify 'significant travel-generating land uses'.
- Circular 15/1999: The Environmental Impact Assessment (Scotland) Regulations 1999:
  - Annex A of Circular 15/1999 sets out indicative thresholds and criteria for identification of development likely to require an EIA, based on size, nature and location.
- Modernising the Planning System White Paper (Scottish Executive, June 2005):
  - Paragraph 5.1.1 of the White Paper proposes a hierarchy of national, major, local and minor developments and provides examples of these.
- Environmental Impact Assessment (Scotland) Regulations 1999 (as amended):
  - Schedule 2 of the EIA Regulations contains applicable thresholds and criteria for the purposes of determining whether a particular development proposal requires an EIA.

AWPR – Criteria for Major Development

54.2.5 The criteria contained within each of the above guidance and policy documents were amalgamated and refined to be appropriate for the purposes of this assessment. Developments in the context of the CIA for the AWPR were, therefore, assessed as major, local or minor on the following basis.

Table 54.1 – Development Assessment Criteria

	Development	Threshold
Major	Retail (Food) (Use Class 1)	>1000m^2
	Retail (Non-Food) (Use Class 1)	>1,000m^2 / >5ha
	Business (Use Class 4)	>2500m^2
	Cinemas	>1,000m^2 / >5ha
	Conference Facilities	>1000m^2
	Stadia	>5ha / >1500 seats
	Leisure (other than Cinemas and Stadia)	>5ha / >1000m^2
	Higher and Further Education (Non-Residential Elements)	>2500m^2
	Industrial Estates	>5ha
	Housing development	>1000 dwellings / >5ha
	Industrial/Manufacturing Development (e.g. factory)	>10ha
	Installations for the disposal of waste	>50,000 tonnes per annum / >5ha
Local	Retail (Food) (Use Class 1)	<1000m^2
	Retail (Non-Food) (Use Class 1)	<1,000m^2 / <5ha
	Business (Use Class 4)	<2500m
	Conference Facilities	<1000m^2
	Leisure (other than Cinemas and Stadia)	<1000m^2
	Higher and Further Education (Non-Residential Elements)	<2500m^2
	Industrial Estates	<5ha
	Housing development	<1000 dwellings / <5ha
	Industrial/Manufacturing Development	<10ha
	Installations for the disposal of waste	<50,000 tonnes per annum / <5ha
Minor	Single housing improvements/extensions	

Major Development Assessment

54.2.6 Chapters 7, 22 and 37 (Land Use) provide details of the development land allocations within relevant Development Plans for the Northern Leg, Southern Leg and Fastlink study areas. Details are also provided for current planning applications submitted between July 2001 and July 2006 including planning applications not yet implemented, applications pending and applications refused but with an appeal pending. Planning applications not considered by the assessments are those which are single housing improvements/extensions which are not directly affected by the proposed scheme, applications which have been withdrawn, applications which have been refused, enforcement actions and applications outwith the study area.

54.2.7 Development land allocations and relevant planning applications were assessed against the criteria in Table 54.1. Those considered to be major developments are listed in Tables 54.2, 54.3 and 54.4. An assessment of potential cumulative impacts arising from the proposed scheme in combination with major developments was undertaken for environmental parameters as listed in Section 54.3.

Table 54.2 – Northern Leg Major Developments

Application/ Local Plan Ref.	Figure Reference	Figure	Site	Description of Development
OP1	$OP1_N$ / $P1_N$	7.2b	Hopecroft, Bucksburn	Approx. 15ha site allocated for 200 residential units. Outline application for 200 residential units submitted in 2004 still under consideration. Permission granted for 40 residential units on part of site, but this has since been called in by the Scottish Ministers.
OP96 / T72	$OP2_N$ / $P4_N$ / $P5_N$	7.2b	Chapel of Stoneywood, Dyce Drive	Approx. 108ha site allocated for general business, industry, specialist employment and a Park & Ride. Park & Ride application granted in 2002 on 6.6ha of site but never implemented. Further planning application submitted in 2004, still pending, for business park with ancillary general industrial and storage and distribution uses.
OP48	$OP3_N$ / $P6_N$	7.2c	Argyll Road, Aberdeen Airport	2.3ha site allocated for a new airport hotel with outline planning consent granted in 2001 and renewed in 2005 for 200 bedroom hotel & restaurant.
OP29 / T72	$OP4_N$ / $P11_N$	7.2e	North Raiths Farm	6.5ha site identified for industrial/business and land set aside for railway use. Planning consent granted in 2000 for the erection of warehouse, new railhead, platform, sidings, access road, earthworks and utility services.
OP52	$OP5_N$ / $P14_N$	7.2e	Lawson's Factory	5.9ha site for residential development. Consent granted March 2005 for 130 residential units pending Section 75 agreement. Site work has started.
OP28	$OP6_N$	7.2f	Annfield Quarry	18.62ha site with planning permission for sand and gravel extraction and consent for the access route. Restoration likely to be to some form of development considered acceptable within the green belt.
OP27	$OP7_N$	7.2g	Hill of Tramaud Landfill Site	Approx. 12ha site with consent for restoration of former sand and gravel quarry through landfill. Restoration is likely to be to some form of development considered acceptable within the green belt.
NC29	Not shown as outside study area (NJ940127)		Dubford	Approx. 45ha Greenfield site for 400 homes to be developed post 2010. However, traffic congestion at the Bridge of Don means that any land release should await construction of the AWPR.
NC29	Not shown as outside study area (NJ917120)		Whitestripes	Approx. 60ha Greenfield site for 2800 homes, 1000 houses post 2010 and 1800 post 2015. Road infrastructure constraints mean the site should only be viewed as a long term development opportunity post AWPR construction.
Not known	$P10_N$	7.2c	Aberdeen Airport, Dyce	Planning application submitted for 300m extension of Aberdeen airport runway. Application currently pending determination awaiting an ES.
Not known	$P25_N$	7.2g	Tarbothill Landfill, Bridge of Don	A planning application was submitted in 2003 for the extension of the time period for landfilling operations to allow for the full restoration of the site. This was granted consent and has since been undertaken.

Table 54.3 – Southern Leg Major Developments

Application/ Local Plan Ref.	Figure Reference	Figure	Site	Description of Development
A1/0514	$P26_S$	22.2a	Mosside	Planning permission for a business/industrial park was granted in July 2003.
OP63	$OP2_s$	22.2a	Mosside/Mains of Cairnrobin	9.8ha site allocated for business, industrial land and rail freight development with planning permission granted in July 2003 for a high quality Class 4 business use, subject to a Section 75 Legal Agreement which is still to be finalised.
NC29	Not shown as outside study area (NJ875055)		Countesswells	The site at Countesswells is allocated as a Future New Community site for 1500 houses incorporating 8 – 10ha of business land. The community will be a stand alone development incorporating a primary school, village centre and employment area. The community will also require to be serviced via a separate junction from the AWPR.
Emp B / A / P^1 / P^2 and fH1	$OP3_s$	22.2a	Marywells	Approximately 90ha site allocated for employment together with a designation for 20 houses and a site allocated for future housing land comprising approximately 35 houses. The majority of the employment land designation is outwith the study area, whilst the land designated for housing lies immediately to the east of the proposed scheme. Further information has been requested but has not been made available by Aberdeenshire Council.
APP/2000/0006	$P27_S$	22.2a	Schoolhill	It is understood that planning permission has been granted for and construction is underway on a new settlement at Schoolhill to the west of the A90. The proposed development includes 800 homes, a business park and community facilities.

Table 54.4 – Fastlink Major Developments

Application/ Local Plan Ref.	Figure Reference	Figure	Site	Description of Development
There are no local plan allocations or planning applications of a scale/nature to warrant further assessment as a major development.				

Limitations to Assessment

54.2.8 This assessment is based on the planning application information for the Aberdeen Western Peripheral Route and surrounding area as made available to Jacobs by Aberdeen City and Aberdeenshire Councils at the time of assessment.

54.2.9 Only applications lodged between July 2001 and July 2006 have been considered in this assessment.

54.2.10 Only those proposed developments evaluated as major developments according to the criteria set out in Table 54.1 have been included in the assessment. It is noted that the development allocations at Whitestripes and Countesswells which lie outside of the proposed scheme study area will only come forward for development further to the implementation of the proposed scheme which will provide the necessary infrastructure. However, these development allocations have been included within the major development assessment since they are of a size and nature to meet the criteria within Table 54.1.

54.2.11 This assessment will not address impacts from other past and present development on the environment affected by the proposed scheme as these have already been considered in the main assessments within Parts B (Northern Leg), C (Southern Leg) and D (Fastlink) where they have influenced the baseline environment.

54.3 Impact Assessment

54.3.1 This chapter provides an assessment of the cumulative impacts potentially arising from the entire proposed scheme (Northern Leg, Southern Leg and Fastlink). Cumulative impacts are considered under separate environmental parameters for the entire proposed scheme, together with major developments detailed above in Tables 54.2, 54.3 and 54.4. The environmental parameters are:

- Land Use,
- Geology, Contaminated Land and Groundwater,
- Water Resources,
- Ecology and Nature Conservation,
- Landscape,
- Visual,
- Cultural Heritage,
- Traffic Noise and Vibration,
- Vehicle Travellers,
- Pedestrians, Cyclists, Equestrians and Community Effects,
- Disruption Due to Construction, and
- Plans and Policies.

54.3.2 Impacts are described in terms of residual impacts, i.e. the impact remaining after the successful implementation of the stated mitigation measures included in the current scheme proposals.

54.3.3 Due to the technical and extensive nature of the air quality cumulative impact assessment, it was considered more appropriate for this to be included within a separate chapter. The air quality cumulative impact assessment is contained within Chapter 55.

Land Use

Entire Proposed Scheme Effects

54.3.4 Land use types within the study area comprise: agriculture (including commercial forestry), demolition and land-take (residential & commercial), community land (including forestry that is used by the community for recreation) and development land.

54.3.5 The proposed scheme would pass through an area which is largely rural in nature, with a predominately agricultural land use. There would be a loss of agricultural land throughout the entire length of the scheme. By a small margin, the majority of agricultural land lost to the proposals lies between Stonehaven in the south and the River Dee. Areas of agricultural land continue to be lost to the proposed scheme north of the River Dee, although the route here also passes through the more residential area of Milltimber and then at Craibstone where a mix of agricultural, infrastructure, commercial and development land uses coexist. A total of 118 agricultural and commercial forestry land interests will be affected by the proposals. This represents approximately 8% of the commercial farms in Aberdeenshire.

54.3.6 The estimated agricultural and forestry land-take to construct the AWPR is approximately 600ha, of which just under 10% is of prime agricultural quality. In a Scottish context this represents less than 1% of the total prime land area and is thus not considered to be a significant cumulative impact. There would be significant residual impacts on 77 agricultural land interests (six of which would have their viability compromised). This could be considered a significant cumulative impact on agriculture and commercial forestry. A number of mitigation measures have been included in the proposals to reduce potential impacts, including the provision for the potential return of land to agriculture (where appropriate), and provision of accommodation works. There is limited scope for any additional mitigation that would further reduce these impacts on a regional scale.

54.3.7 There are few residential areas throughout the entire route as the proposed scheme has been designed to limit the number of properties potentially affected. The loss of residential property is concentrated in the Milltimber area, with 7 of the 13 properties affected demolished in this area. Additional dwelling houses affected are in the Craibstone, Kingswells, Blacktop and Charleston-Blaikiewell areas. The potential cumulative impact on residential land use is limited in a regional context, however, the loss of property for residents in affected properties will always remain significant.

54.3.8 The only significantly affected type of community land is forestry which is considered as a potential recreational resource. Note that not all forestry areas provide for public access. The loss to forestry, including commercial forestry with public access, covers approximately 70ha. However, approximately 136ha will be replanted as mitigation and of this approximately 69ha will mitigate against community land losses. The main areas where forestry is affected are Kirkhill Forest, East Woodlands, Littlejohn's Wood, near the B977 overbridge, Greenhowe, Guthrie Hill Plantation, Greens of Crynoch, H Ram Wood, Monument Wood, Craibstone, Cleanhill, West Hatton and areas around Upper Beanshill, Cloghill and Derbeth Farms. At these locations, a significant area or percentage is lost and/or there is severance.

54.3.9 Although, woodland areas will remain and proposed planting will limit the losses overall to 0.32ha, the impact on links and trails within and between some locations could change the land use context in terms of value to the community. Overall, the residual cumulative impact on community land is not considered to be significant in a regional context, as in many cases the AWPR proposals will skirt woodland, leaving the majority of this land use resource intact.

54.3.10 Other than farming sector interests (see paragraph 54.3.6), commercial businesses within the study area are relatively few. One business is affected by noise and 17 are directly affected by land-take, with a larger number affected by changes, mostly neutral or beneficial, to access. Cumulative impacts on businesses are not envisaged to be significant.

54.3.11 Development land within the study area tends to be concentrated in areas north of Stonehaven, Milltimber and Charleston and around Craibstone between the A96 junction and Kirkhill industrial estate. There are land-take impacts on 10 development sites and there may be adverse amenity impacts on a number of others. However, the improved access opportunities afforded by the proposed scheme results in beneficial impacts. Overall, cumulative impacts on development land are not envisaged to be significant.

The Proposed Scheme and Future Major Development

54.3.12 Together with the AWPR, other major proposals could in future significantly change the rural land use context of the region.

54.3.13 The most significant cumulative impact would be the additional loss of agricultural land, particularly around Charleston, where a mix of housing and business proposals, in conjunction with the proposed scheme, would change the land use setting.

54.3.14 Developments proposed north of Kingswells are mainly restricted to the redevelopment of brownfield sites and would constitute an improvement in land use for those areas. The substantial green field release for housing purposes at Dubford and Whitestripes would also change the land use context to create a new development corridor.

Geology, Contaminated Land and Groundwater

Entire Proposed Scheme Effects

54.3.15 The solid geology of the area comprises granite and metasediments, while drift deposits mainly include boulder clay with significant areas of glacial meltwater deposits and occasional peat deposits. No geological Sites of Special Scientific Interest (SSSIs), Regionally Important Geological Sites (RIGS) or other designated sites of geological value have been identified in the area and no geological cumulative impact is expected.

54.3.16 Groundwater is present at shallow depth (0 to 8m bgl) in the area and is expected to be intercepted at numerous cuttings. However, impacts on groundwater levels are expected to be localised, and the implementation of mitigation measures will ensure Negligible residual impacts on private groundwater supplies. Consequently, significant cumulative impacts on groundwater flow are not envisaged.

54.3.17 Similarly, mitigation measures have been proposed to prevent contamination (issuing both from historical contaminated areas and from construction/operation activities) and protect private groundwater supplies. Those mitigation measures should ensure that no cumulative impacts on groundwater quality will occur.

The Proposed Scheme and Future Major Development

54.3.18 Potential cumulative impacts relating to future major developments include the creation of a new sand and gravel extraction facility, located some 550m to the south of the Northern Leg, to the east of Corby Loch. However, this site is expected to have a very localised impact on the sand and gravel resources and has already been taken into account in the baseline environmental assessment.

54.3.19 Potential cumulative impacts from contamination of groundwater relate to developments such as the conversion of a former sand and gravel quarry into a landfill near Harehill and the extension of time period for landfilling at Tarbothill landfill near Bridge of Don, both in the Northern Leg. However, potential risks of contamination to groundwater are covered through the Pollution Prevention Control (PPC) licencing process which requires a detailed Hydrogeological Risk Assessment and modelling to be carried out.

54.3.20 No significant cumulative impacts on geology, contaminated land and groundwater have been identified.

Water Resources

Entire Proposed Scheme Effects

54.3.21 An overview is provided of the combined impacts that may arise from the Northern Leg, Southern Leg and Fastlink together on surface water hydrology, water quality and fluvial geomorphology. The approach adopted uses a qualitative approach to consider impacts on the two main catchments within the AWPR corridor, the River Don and Dee catchments, and considers overall impacts in a regional context.

54.3.22 The proposed scheme will incorporate a number of measures to mitigate for impacts on the water environment. These include SUDS measures such as attenuation basins in combination with filter drains, treatment ponds and swales designed so that flows will be attenuated to pre-development rates. Mitigation measures for the construction phase will include implementing best practice and adhering to SEPA pollution prevention guidelines.

Operational Impacts

Hydrology and Flood Risk

54.3.23 For the whole scheme, there would be 18 outfalls draining a total area of 105.80ha. Eleven of these outfalls would drain to the River Dee and Don catchments, which receive a total drainage area of 68.36ha.The following watercourses within the River Dee and Don catchments will be receiving road drainage from the AWPR.

River Don Catchment:

- River Don
- Green Burn
- Bogenjoss Burn
- Goval Burn
- Corsehill Burn

River Dee Catchment:

- River Dee
- Westholme Burn
- Gairn Burn
- Burnhead Burn
- Jameston Ditch
- Loirston Burn

54.3.24 Scheme drainage design is such that flows will be attenuated to pre-development rates and will thus minimise any changes in surface run-off or flood risk as a result of numerous outfalls introduced to the River Don/Dee catchment. It is considered that the implementation of SUDS, located outwith the 0.5% AEP floodplains, will reduce the cumulative residual impacts on the hydrology of watercourses receiving drainage, when considered together. Overall this impact is not considered to be significant.

54.3.25 Flood risk has been evaluated separately at each specific crossing location through the scheme and is presented in the Water Environment Chapters. All culverts and crossings of existing watercourses have been designed to convey the 0.5% AEP flow. This design feature, in combination with the drainage design, is envisaged to reduce cumulative impacts on hydrology and flood risk to Slight/Negligible.

Water Quality

54.3.26 SUDS measures are proposed at each drainage outfall. Each outfall has been checked individually to ensure that statutory levels of indicator metals have been achieved by implementation of mitigation. Potential concentrations of a pollutant decrease as the plume moves downstream, away from the point source, due to the effects of dilution and dispersion. When considering water quality at a catchment scale the potential for dilution by smaller tributaries can improve water quality from that predicted at outfall. Consequently by treating each outfall to statutory levels it is anticipated that the in-combination effect of several outfalls on a sub-catchment, for example Goval Burn catchment in the north of the scheme, is not considered to be significant.

54.3.27 Similarly the dilution potential afforded by the River Dee and Don catchments is considered to result in no significant in-combination impacts on water quality. Due to its SAC status, this has been confirmed for the River Dee through creation of a stochastic Water Quality model using SIMCAT software. The findings of the modelling exercise indicate that, given the dilution potential of the Dee and the level of the designed mitigation at individual outfall locations, residual impacts upon the water quality of the Dee catchment are of Slight/Negligible significance.

Fluvial Geomorphology

54.3.28 There are a number of watercourses within the River Dee and Don catchments that are already highly modified and have low morphological diversity, e.g. Westholme Burn in the Dee catchment. However the more morphologically diverse catchments of Kingcausie and Blaikiewell in the Dee catchment will undergo major realignments and proposed culverting.

54.3.29 For the River Don catchment, the morphologically diverse sub catchment comprising Gough Burn, Green Burn and Craibstone Burn will be significantly impacted through realignment and culverting straightened in sections along their lengths. Additionally Bogenjoss Burn, a tributary of the River Don will be extensively modified as part of the scheme.

54.3.30 The mitigation proposed for the River Dee catchment, for example the realignment of the Kingcausie Burn, is considered to reduce the impacts to geomorphology. Consequently residual impacts upon this catchment are considered to be of Slight/Negligible significance.

54.3.31 The geomorphology of the River Don catchment is considered to be affected by significant residual cumulative impacts as a result of the proposed scheme. Further mitigation beyond what is described in this ES, such as the development of detailed watercourse realignment proposals as part of the CAR process, could reduce cumulative impacts in the River Don catchment.

Construction Impacts

54.3.32 The overall construction impacts posed on watercourses as a result of the entire proposed scheme are not considered to be significant when viewed on a larger catchment-scale, provided best practice is employed and all work is phased so that, where possible, all watercourses in a sub-catchment are not worked on simultaneously.

Overall Conclusion

54.3.33 When considered in its entirety, the operation of the AWPR is not expected to present a significant impact to the water environment as a result of impacts to surface water hydrology, flood risk and water quality. However, from a fluvial geomorphology perspective, localised long-term severe impacts to geomorphology may have significant cumulative implications for geomorphology on a wider scale. Loss of morphologically diverse channels is undesirable in the context of the Water Framework Directive as the majority of small watercourses in the Aberdeenshire area are predominantly modified in nature. Therefore this is considered likely to result in a residual significant impact upon geomorphology within the River Don catchment.

54.3.34 During construction and following appropriate mitigation, impacts upon the water environment are not considered to be significant provided mitigation measures are adhered to. Mitigation measures should include the phasing of works over a sub-catchment scale, i.e. where possible, construction works on watercourses within a sub-catchment should not be undertaken simultaneously.

The Proposed Scheme and Future Major Development

54.3.35 The Water Environment (Controlled Activity) (Scotland) Regulations 2005 include the requirement to drain all surface water runoff from new developments through SUDS or equivalent measures equipped to avoid pollution of the water environment. For the purposes of this assessment these measures are considered to effectively mitigate any impacts from new developments on surface water hydrology and quality. When predicting the accumulation of impacts, these mitigation measures are assumed to be in place.

54.3.36 A number of housing, business and industrial developments are proposed around the Charleston Junction of the Southern Leg. However, when considered in conjunction with the proposed route, the cumulative impact posed by those on the River Dee catchment is not considered to be significant. The development at Countesswells falls into the Den Burn catchment which is outwith the River Dee catchment.

54.3.37 There are six proposed developments within the River Don catchment area, predominantly of a residential and industrial nature. The impacts of these in combination with the AWPR are not considered to result in a significant cumulation of impacts on the water environment

54.3.38 In summary, future major developments in combination with the proposed scheme are not envisaged as having a significant cumulative impact on the water environment

Ecology

Entire Proposed Scheme Effects

Operational impacts - General

54.3.39 The scheme as a whole would, for many species, act as a boundary around Aberdeen which may limit genetic flow and could result in generally reduced biodiversity. Loss and fragmentation of woodlands would decrease the local carrying capacity for some woodland species and decreases connectivity in the region by limiting dispersal over and above the boundary effect of the road.

54.3.40 To mitigate for loss and fragmentation of habitat in woodlands, planting will be undertaken to connect valuable habitats. This includes connecting areas such as West Hatton District Wildlife Site to Cloghill grassland complex in the north and creating scrub-lined detention basins in the south. Scrub and woodland plantings along the roadside edge will link habitats, such as Bogenjoss Burn to East Woodlands woodland around Pitmedden House. Across the whole scheme, 17.7ha of woodland would be lost. This will be mitigated by reinstatement and also by new plantings for landscape and ecology purposes, resulting in an overall gain of woodland. In addition, off site habitat creation plans will be implemented in conjunction with organisations such as the Forestry Commission to compensate for loss of habitat.

54.3.41 There is potential for hydrological disruption and loss of connectivity of wetland areas. This could give rise to a cumulative effect on wetlands, as these are scarce habitats throughout Aberdeenshire. Red Moss in the Northern Leg, Moss of Auchlea, Hare Moss and Fishermyre may be affected. The potential reduction in habitat quality of these areas will be mitigated through a number of measures.

54.3.42 Ponds will be designed to maximise their ecological value. Connectivity of watercourses will be maintained to prevent fragmentation, isolation and severance of wetland habitats and where sections are being realigned. Road design and construction materials will minimise hydrological disruption to wetland sites. Habitat loss will be compensated for by off-site habitat creation.

Operational impacts - Habitat Loss and Fragmentation

54.3.43 Displacement of home ranges through habitat loss and fragmentation may result in the reduction of the local range of social groups such as badgers, otters and red squirrels, thus introducing or increasing intra-specific competition. Appropriate mitigation will be required to ensure the small but nationally important water vole community in Fishermyre does not lose viability.

54.3.44 Where badger setts are excluded, replacement setts will be constructed (i.e Limpet Burn ch1400), Species specific planting will minimise habitat loss and will be planted to tie in with the existing vegetation in the wider environment.

54.3.45 Where red squirrel habitat is lost, this will be compensated through planting schemes, such as connecting up woodland areas supporting or capable of supporting red squirrels. As well as compensating for habitat loss, linking suitable areas of woodland will also reduce fragmentation and isolation caused by the proposed scheme. Additionally, this habitat will provide suitable shelter for brown hares.

54.3.46 Provision will be made to allow otters, badgers and other small mammals to cross the carriageway at watercourses. Where the span of underbridges proposed for watercourse crossings permits, areas of bank side habitat will be retained along which fauna can pass under the road. In other locations, wildlife overbridges, green bridges and farm access underpasses will allow badgers, red squirrels, bats and deer to cross the carriageway.

54.3.47 To reduce any residual impacts to water vole at Fishermyre, habitat creation/enhancement is proposed. This will involve the relocation of water vole habitats within 200m of the existing colony to enable genetic exchange and recruitment between colonies. Extension of water vole habitats to the south of Fishermyre will enable the potential for long term colonisation of Limpet and Megray Burn.

54.3.48 Permanent loss of coniferous plantations, arable, improved grassland and scattered scrub along the scheme route are to be specifically mitigated by maintenance of existing and creation of new habitats of ecological scrub and riparian mosaics. Generic mitigation will be applied to all other aspects of the scheme construction and operation with regards to wintering birds, except at Nether Kirkton where the scheme crosses the River Don. The River Don provides suitable nesting and foraging habitat for kingfisher (a WCA1i species). Any sand and/or gravel bank/s in this area will be surveyed for potential nesting kingfisher one breeding season in advance of any operational habitat management. Works will not be undertaken if breeding is confirmed. Any suitable nesting habitat will be securely covered out with the main breeding season. Where the presence of kingfisher is confirmed, replacement breeding habitat will be created as close to the location where the original habitat to be lost.

54.3.49 Where woodland nesting habitats used by birds are severed, bird boxes (for a suitable range of species) will be considered to compensate for lost habitat. Additional planting within and adjacent to existing areas of woodland/scrub using native scrub and tree species will take place thereby creating additional breeding and foraging habitat.

54.3.50 The proposal would result in the fragmentation of linear landscape features over the whole scheme. These are frequently-used commuting routes for species such as bats. This fragmentation, while not locally significant, may cumulatively disrupt established species movement patterns on a regional scale.

54.3.51 Where the carriageway severs known bat commuting routes and in particular where the road is on an embankment, planting will be used to reduce the risk of collision with oncoming vehicles. Mitigation planting and sheltering vegetation will be used to guide bats to safe crossing points. In locations that are not identified as crossing points, roadside planting will aim to use trees which do not produce nectar or attract insect prey. Any plants that do will be at least 10m from the road to reduce the likelihood of RTAs.

54.3.52 Where older trees and those with suitable crevices are lost, bat boxes will be erected to provide alternative roost sites and offset those to be lost until replacement trees have matured. Careful consideration will be made to ensure boxes and placed in suitable sites to provide the bats with access to suitable foraging.

54.3.53 Where possible, underpasses and culverts being constructed with provision for badgers and otters will also be designed and managed sympathetically for bats.

Operational Impacts - Noise, Vibration and Disturbance

54.3.54 The planting of native tree and scrub species will screen for noise, vibration and disturbance impacts associated with the operation of the carriageway. Roadside lighting will be strategically sited where necessary (e.g. major junctions) preventing additional disturbances to fauna and habitats.

Operational Impacts - Road Traffic Accidents

54.3.55 The increased risk of RTAs over the whole area due to fragmentation and increased vehicle speeds could have a cumulative impact on local populations, potentially making more marginal ones unviable. Otters and red squirrels may be particularly affected.

54.3.56 Mitigation measures have been designed to reduce the number of RTAs caused as a result of the construction and operation of the AWPR. In addition to the provision of underpasses, wildlife overbridges and green bridges, the AWPR will be extensively fenced with otter and badger proof fencing to prevent these species accessing the carriageway. Grassland verges (approximately 5m in width) will be maintained between the edge of the carriageway and any areas of scrub or woodland to

decrease RTAs in bird/ bat species. Where the carriageway passes through existing areas of established woodland, trees will be removed or significantly thinned within 5m of the road boundary unless considered to be of significant ecological value.

Construction Impacts

54.3.57 Construction impacts of the proposed scheme would result in fragmentation leading to habitat loss, disturbance to protected species.

54.3.58 Temporary habitat loss will be minimised by siting work compounds and storage sites at least 30m away from any watercourse and avoiding key areas of woodland, dense scrub and/or wetland. Pre-construction surveys will be undertaken to ensure that areas are not supporting breeding birds prior to construction activities commencing. Where relocation of species is required this will also occur outside the breeding season and when offspring are no longer solely dependent on parental support. To minimise disturbance to local roosting sites and to prevent intra-specific competition of bats and birds, temporary screens will be erected around known roosts. Temporary fencing will be erected around the working corridor to ensure that during construction disturbance is minimized to habitats which are suitable for red squirrels, otters and other small protected mammals.

54.3.59 To mitigate impacts on water voles, careful consideration of techniques and materials used near water vole habitats during construction will ensure existing surface water flow is maintained. Construction will not occur between May-August near water vole habitats to reduce potential disturbance effects.

54.3.60 Construction impacts on wintering birds includes the potential for direct mortality (RTAs), temporary habitat fragmentation, disturbance and potential pollution. Returning wintering birds could avoid construction areas and this could potentially alter migration routes if construction continues over consecutive winters. This is particularly true of Loirston Loch and the wetland mosaic incorporating Red Moss, Lily and Corby Lochs, although Loirston Loch is already subject to habitual traffic disturbance. However, at these locations construction activities during winter time should be kept to a minimum during early morning and evening to minimise disturbance to wintering birds.

Construction and Operation Impacts on Freshwater Habitats

54.3.61 The scheme includes drainage outfalls to many tributaries of the Don and the Dee Rivers. Mitigation measures will be implemented to avoid or reduce potential discharge regime impacts on food availability, water quality (of particular importance for freshwater pearl mussels), salmon migration cues and microhabitat simplification.

54.3.62 Road treatment systems will now occupy some areas where previously runoff through agricultural land carried organic loads to watercourses. This change in the nutrient status of watercourses could potentially lower productivity which may have effects on macrofaunal communities at a regional scale. A change to the discharge regime and reduced water quality from sediment and heavy metals in road runoff will also impact heavily upon sensitive areas.

54.3.63 Culverts and realignments are necessary due to the multiple crossings of the scheme over watercourses. Mitigation will be implemented to reduce the potential impacts of realignment and culverting on freshwater habitats.

54.3.64 The road drainage systems will ensure that road runoff entering a burn complies with Environmental Quality Standards. Despite the potential loss of some organic loads into the watercourse due to treatment processes, avoidance of adverse impacts upon freshwater ecology, fisheries and water quality is of greater conservation benefit. Mitigation during construction includes careful supervision of works with Use of Best Practice on site, along with minimal disturbance to reduce sediment overload

and accidental spillages. Operational mitigation will include the installation of detention basins, treatment ponds and sediment traps.

54.3.65 Temporary de-watering sections of tributaries, re-alignments and in-river works will be avoided where possible. Prior to in-river works electric fishing will be carried out to check for the presence of protected species. Areas that are to be dewatered, re-aligned or excavated will have the fish removed and moved to an alternative appropriate site. No de-watering or realignment will be carried out during the spawning or egg incubation seasons. All culverts and bridge piers have been designed to ensure that there is no restriction to the movement of fish. Specific activities (such as piling) will be avoided during in sensitive periods (e.g. the first third of salmonid egg incubation).

54.3.66 Significant cumulative impacts are not envisaged as mitigation and drainage proposals will reduce the risk of impacts.

Summary of Cumulative Effects on Ecology

54.3.67 Without mitigation, the overall cumulative effects of the entire proposed scheme on ecology are likely to be significantly adverse. However, detailed ecological mitigation incorporating both specific mitigation and offsite habitat creation will have the effect of reducing cumulative impacts to minor significance overall.

The Proposed Scheme and Future Major Development

54.3.68 Annfield Quarry is a proposed sand and gravel extraction with access route that is situated to the east of the SSSI complex including Lily, Corby and Bishops Loch. This could affect the use of the wetland habitat for birds due to increased disturbance, and hydrological impacts could also be increased.

54.3.69 The Kirkhill Park and Ride in the Northern Leg could further increase traffic in an area already fragmented by the proposed scheme resulting in more RTAs particularly for red squirrel and a general increase in disturbance for all species.

54.3.70 The building of 1500 homes including a village centre and a primary school (NC29) at Countesswells in the Southern Leg, to the east of the sensitive areas of Gairnhill Wood and Silver Burn, will further increase disturbance and fragmentation and RTAs due to increased traffic and potentially greater recreational pressure on the wood.

Landscape

Entire Proposed Scheme Effects

54.3.71 Significant impacts would accrue along the length of the scheme due to the introduction of the road, associated earthworks, structures, fast moving traffic and lighting into the generally peaceful and undulating agricultural land and wooded hillsides within the study area. Residual impacts for each landscape character type are set out below:

Hill

54.3.72 The route will cut through and around prominent and highly visible hillsides at Cookney, Rothnick, Stranog, Craigingles, Beanshill, Fifeshill, Craigton, Broomfold and Kingswells and then around the lower slopes of Tyrebagger Hill. The impact on the distinctive hill landscape, which encompasses Aberdeen and provides an attractive setting for the city, will result in significant adverse cumulative impacts.

Open Farmland

54.3.73 The open, rolling, undulating farmlands with their distinctive drystone walls encompass Aberdeen City. The proposed scheme will sever drystone walls, agricultural field patterns and watercourses and introduce the proposed scheme into previously tranquil areas. The impacts of junctions which will be lit will result in significant adverse cumulative impacts which will be most severe within the flat agricultural area at Blaikiewell (junction of the Fastlink and Southern Leg), Muchall (open exposed farmlands) and at Goval (introduction of the A947 overbridge).

Wooded Farmland

54.3.74 The wooded farmlands are a significant feature of higher undulating ground and the loss of mature woodland (on the southern bank of the River Dee and as the road severs the Scottish Agricultural College grounds at Craibstone) will impact on the amenity and character of these areas. Adverse cumulative impacts due to the loss of woodlands are not, however, expected to be significant.

Valley

54.3.75 The proposed bridges over the River Dee and River Don, and associated embankments and ponds, will permanently alter the landform and the visual character of the landscape over wide areas. This will be most severe in the Dee Valley, which is of higher scenic value. There will be a significant adverse cumulative impact.

Urban

54.3.76 At Milltimber, the introduction of the proposed scheme in cutting, demolition of buildings and the loss of mature woodland and amenity planting will permanently alter the landform, suburban landscape and enclosed visual character of the area, which is a localised significant impact on this area. The overall cumulative impact on urban areas however will not be significant.

Conclusion

54.3.77 When considered cumulatively, it is envisaged that there will be significant adverse impacts on the essential character of the hills, open farmlands and valleys within the study area.

<u>The Proposed Scheme and Future Major Development</u>

54.3.78 To the north of the study area the proposed scheme in association with the runway extension at Aberdeen Airport and the construction of a hotel and new housing areas and industrial / business expansion will result in the further urbanisation of the already fragmented agricultural landscape between the industrial and urban areas of Kirkhill and Dyce and Tyrebagger Hill.

54.3.79 The Park and Ride and general business development proposed at Newton when considered in association with the proposed scheme will significantly alter the character of the landscape. The loss of mature woodlands and agricultural land will result in a permanent urbanisation of the landscape.

54.3.80 Large areas of new homes are proposed around the northern perimeter of Aberdeen at Whitestripes, Dubford and to the south of the proposed Charleston Junction. The loss of agricultural land will result in further urbanisation in the landscape of the region.

54.3.81 Overall the proposed scheme, together with other major proposals would contribute to further fragmentation and loss of the agricultural landscape and rural scene that provides the setting for Aberdeen City.

Visual

Entire Proposed Scheme Effects

54.3.82 Significant impacts accrue along the length of the scheme due to the introduction of the road, associated earthworks, structures, fast moving traffic and lighting into views from properties, settlements and outdoor spaces.

54.3.83 For almost 31% of built receptors within the study area, the impact will remain significant after fifteen years, reducing from almost 57% during the winter year of opening. For some 60% of outdoor receptors within the study area, the impact will remain significant after fifteen years, reducing from almost 74% during the winter year of opening.

54.3.84 It is envisaged that, overall, the cumulative impact on built receptors will not be significant, while for outdoor receptors the overall impact will be significant.

The Proposed Scheme and Future Major Development

54.3.85 To the north of the study area, the proposed scheme in association with the runway extension at Aberdeen Airport and the construction of a hotel and new housing areas and industrial / business expansion will generally increase impacts on scattered receptors in the Newhills and Tyrebagger Hill areas. This additional adverse visual impact will be insignificant.

54.3.86 The Park and Ride and general business development proposed at Newton, when considered in association with the proposed scheme, will increase impacts on properties in Chapel of Stoneywood and within the SAC grounds. This additional adverse visual impact will be insignificant.

54.3.87 The large areas of new homes proposed around the northern perimeter of Aberdeen at Whitestripes and those currently being constructed in the former Victoria works at the edge of Dyce (see Chapter 12) would be potentially intervisible with the proposed scheme. This additional adverse visual impact will be insignificant.

54.3.88 Overall, the visual impacts of other major developments will not have a significant cumulative effect on the impacts of the proposed scheme.

Cultural Heritage

Entire Proposed Scheme Effects

54.3.89 The proposed scheme may impact on the cultural heritage resource of the region in three main ways:

- direct physical impacts, both on known and unknown archaeological site and areas;
- indirect impacts on the visual setting of extant monuments and buildings; and
- direct and indirect impacts on the historic landscape as a whole.

54.3.90 The study area contains a number of sites and areas of cultural heritage interest. While some of these sites have been assessed as being of National or Regional importance, the vast majority have been assessed as being of Local or Less than Local importance. The historic landscape is assessed as being of Local importance. It is agricultural in nature, laid out in the 18th and 19th Centuries, and partially modified in the 20th Century.

54.3.91 In addition to the known sites, there is also potential for the presence of unknown archaeological remains. At present there is insufficient information to assess the importance of any such potential remains.

54.3.92 The potential significance of impact on individual sites has been assessed as ranging from None to Substantial, with the majority being Slight (adverse). Taking into account only known cultural heritage sites, the cumulative impact of the scheme on the cultural heritage resource has been assessed as not significant. However, it should be noted that it is highly probable that currently unknown sites will be identified as part of the recommended programme of evaluation and mitigation works. It is not possible to assess the significance of impacts on such potential sites.

The Proposed Scheme and Future Major Development

54.3.93 In a similar manner to the proposed scheme, future major developments could also have direct and indirect impacts on known and unknown sites of cultural heritage importance and on the historic landscape. In the absence of detailed information on other proposed developments, a direct impact has been assumed for any known site that is located within the boundary of these developments. Based on information from the National Monuments Record of Scotland, the majority of potential impacts identified are on sites of Less than Local or Local importance, although potential impacts on a Category B Listed Building of regional importance and a Scheduled Ancient Monument of National importance were also identified.

54.3.94 While it is not possible to assess the impact of these schemes on unknown sites, or to assess impacts on the setting of sites by the other major developments, based on the potential impacts on known sites the cumulative impact on the cultural heritage resource at a regional level has been assessed as not significant.

54.3.95 It is likely that all direct impacts can be mitigated through recording works in advance of, or during construction, while the significance of visual impacts can be reduced through landscape design.

Traffic Noise and Vibration

Entire Proposed Scheme Effects

54.3.96 The entire area over which noise changes arising from the proposed scheme have been shown to occur comprises:

- a ‘Core Study Area’, which extends 500m either side of the proposed scheme centreline, and
- a ‘Wider Study Area’ encompassing any predicted indirect changes to noise levels (by +25%, or -20%) as a consequence of changes to traffic flows and speeds on the existing road network, excluding those in the core study area.

54.3.97 Noise changes within the Core Study Area are described in Chapters 15, 30 and 45 (Traffic Noise and Vibration), separated on the basis of receptor location. The Wider Study area assessment offers an overview of noise effects throughout the Aberdeen and Aberdeenshire area. It is necessary because the introduction of a road where no road existed before the proposed scheme may result in changes to the traffic patterns and hence flows on the local road network at some distance from the actual proposed route and it may therefore affect noise levels and the level of perceived noise nuisance experienced by some local residents already exposed to road traffic noise.

54.3.98 The assessment has been made on the basis of changes in traffic flow, and the consequent change in population annoyed by noise, as detailed within the Scottish Transport Appraisal Guidance (STAG). This is undertaken by a geographical analysis of population data to estimate the number of people living within 50m of all identified roads within the Wider Study Area. The roads were identified on the basis of a predicted change in the Basic Noise Level categorised as ≥+1dB, < 1dB change and ≤-1dB.

54.3.99 The roads which are predicted to experience a change in the Basic Noise Level as a consequence of the scheme are shown in Figure 54.1.

54.3.100 The assessment of the difference in the estimated population who would be annoyed by noise, based on the STAG methodology, when comparing the do-minimum and do-something scenarios is presented in Tables 54.5 and 54.6 for the Year of Opening and Design Year (15 years after opening), respectively. STAG requires an estimate of the number of people annoyed by noise in the longer term in the Do-Minimum and Do-Something, based on the population exposed to different noise levels (LAeq, 18hr, in 3dB interval bands) multiplied by the Annoyance Response Function (expressed as % highly bothered by noise).

54.3.101 The results in Tables 54.5 and 54.6 show that with the scheme in place the net results over the Wider Study Area, i.e. outwith the Core Study Area, the net annoyance change in the 15th year after opening would be that 1865 fewer people would be annoyed by noise than would be annoyed by noise without the scheme in place. This is considered to be a significant beneficial impact.

Table 54.5 – No. of Households Experiencing 'Do Minimum' & 'Do Something' Noise Levels (given in dBL_{eq}) in Opening Year

Do Minimum	Do Something													
	<45	45-47.9	48-50.9	51-53.9	54-56.9	57-59.9	60-62.9	63-65.9	66-68.9	69-71.9	72-74.9	75-77.9	78-80.9	81+
<45	534	22	0	2	2	2	1	6	3	2	4	0	0	0
45-47.9	57	115	4	0	2	2	0	0	0	0	0	0	0	0
48-50.9	111	105	315	9	1	3	1	0	0	0	0	0	0	0
51-53.9	114	91	172	526	21	5	2	1	1	0	0	0	0	0
54-56.9	66	168	84	432	2022	38	1	1	0	0	0	0	0	0
57-59.9	5	14	30	82	561	3713	168	9	1	0	0	0	0	0
60-62.9	8	24	56	43	58	1101	6020	189	34	3	0	0	0	0
63-65.9	1	4	24	72	47	73	1652	6737	264	19	0	0	0	0
66-68.9	1	0	3	20	7	18	36	1275	5868	548	12	0	0	0
69-71.9	0	0	0	0	5	3	11	11	968	4497	612	25	0	0
72-74.9	0	0	0	0	1	0	1	2	36	514	2402	272	2	0
75-77.9	0	0	0	0	0	0	0	0	0	8	263	620	25	0
78-80.9	0	0	0	0	0	0	0	0	1	0	0	5	84	0
81+	0	0	0	0	0	0	1	0	0	1	0	0	0	6

Table 54.6 – No. of Households Experiencing 'Do Minimum' & 'Do Something' Noise Levels (given in dBL_{eq}) in 15th Year After Opening

Do Minimum	Do Something													
	<45	45-47.9	48-50.9	51-53.9	54-56.9	57-59.9	60-62.9	63-65.9	66-68.9	69-71.9	72-74.9	75-77.9	78-80.9	81+
<45	522	1	1	1	2	2	1	6	4	1	4	0	0	0
45-47.9	49	114	5	1	1	0	0	0	0	0	0	0	0	0
48-50.9	103	52	224	24	6	2	0	0	0	0	0	0	0	0
51-53.9	51	103	247	410	15	3	3	0	1	0	0	0	0	0
54-56.9	60	136	134	392	1831	61	3	2	0	0	0	0	0	0
57-59.9	6	34	46	47	793	3430	118	9	1	0	0	0	0	0
60-62.9	14	11	71	38	40	1127	5786	131	19	3	0	0	0	1
63-65.9	1	5	10	114	45	150	1958	6482	134	5	0	0	0	0
66-68.9	6	3	6	35	22	37	96	1609	5863	203	0	0	0	0
69-71.9	0	0	1	5	3	12	41	188	1485	4819	220	7	0	0
72-74.9	0	0	2	0	4	1	23	46	192	809	2141	34	0	0
75-77.9	0	0	0	0	1	0	0	0	46	102	376	468	8	0
78-80.9	0	0	0	0	0	0	0	0	1	0	0	25	71	0
81+	0	0	0	0	0	0	0	0	0	0	0	0	0	6

The Proposed Scheme and Future Major Development

54.3.102 The assessment of noise levels 15 years after opening is based on traffic data from the ASAM model. This takes into account the following major future developments:

- Whitestripes, phases 1 and 2;
- Countesswells; and
- Dubford.

54.3.103 It is beyond the scope of this strategic-level noise assessment to make a detailed assessment of potential noise impacts from the remaining major future developments listed in Tables 54.2 – 54.4. However, the general point can be made that those developments generating significant volumes of vehicular traffic are likely to create a noise impact which could be cumulative with those of the proposed scheme. Noise emissions from developments such as industrial estates and the airport runway extension are likely to be controlled through planning conditions. However, the scope exists for cumulation of noise impacts from these developments with the noise impacts from the proposed scheme.

Vehicle Travellers – View From the Road

Entire Proposed Scheme Effects

54.3.104 Travellers would experience a rural journey with views, which would be mostly open and extensive in the Fastlink section. Views for travellers on the Northern and Southern Legs would extend across a rural landscape in contrast to the urban journey that is currently experienced by travellers on the A90 route through Aberdeen City.

54.3.105 The cumulative impact on travellers views would be generally significant and beneficial.

The Proposed Scheme and Future Major Development

54.3.106 Overall the cumulation of impacts of the proposed scheme, together with other major future developments would be of only minor significance in terms of views experienced by travellers.

Vehicle Travellers – Driver Stress

Entire Proposed Scheme Effects

54.3.107 Cumulatively, driver stress is predicted to increase as a result of the proposed scheme in the following main locations,

- A96 Blackburn to Craibstone eastbound from low to moderate; and
- A947 Aberdeen to Olmeldrum to Turriff southbound from moderate to high.

54.3.108 Cumulatively, driver stress is predicted to decrease as a result of the proposed scheme in the following main locations,

- The A90 (T) Stonehaven to Newtonhill from moderate to low;
- The A90 (T) Newtonhill to Portlethen northbound (High to Moderate), southbound from moderate to low;
- A90 (T) Murcar Industrial Estate to Balmedie southbound from moderate to low;
- A90 (T) Charleston to Bridge of Dee from moderate to low;
- A96 Blackburn to Craibstone southbound from moderate to low;
- B999 Aberdeen to Tarves westbound from high to moderate;

- B9077 South Deeside (east of B979) eastbound from high to moderate;
- The A944 Aberdeen to Westhill Road westbound (west of Kingsford Industrial Estate) from moderate to low; and
- The B979 between A93and A96 southbound from high to moderate.

The Proposed Scheme and Future Major Development

54.3.109 Those identified major developments which would generate significant volumes of vehicular traffic are likely to create an impact upon driver stress which could be cumulative with those of the proposed scheme. The implementation of the AWPR may also bring additional land forward for development, thereby potentially adding further vehicular traffic to the proposed route, although, this has been accounted for within the baseline assessment. Therefore, in general terms, the cumulative impact upon driver stress is likely to be minimal.

Pedestrians, Cyclists, Equestrians and Community Effects

Entire Proposed Scheme Effects

54.3.110 The proposed scheme would cross numerous key routes (minor roads, paths, Rights of Way, etc) used by pedestrians and others. Taking the proposed mitigation into account, the following offers an overview of the cumulative impacts of the entire proposed scheme on journey lengths, amenity value and community severance for the key routes of the region.

Journey Length and Amenity Value

54.3.111 Although most minor roads are retained and a number of Non-motorised User (NMU) crossing points have been provided, the length of some path diversions are still anticipated to create adverse impacts on pedestrians and others in some locations. Whilst the experience of crossing the proposed scheme would be relatively short and therefore the noise and air quality impacts would be Slight, the visual impact in many places would create a Moderately adverse impact on pedestrians and others.

Community Severance

54.3.112 The largest communities adjacent to the route corridor with the most facilities are located at Peterculter / Milltimber and Westhill / Kingswells. NMU access to community facilities is most adversely impacted in the Peterculter / Milltimber communities. The Northern Leg and Fastlink areas are characterised by scattered communities and have fewer facilities. The majority of routes are being used for recreational purposes and therefore the significance of impact on pedestrians and others accessing countryside areas is considered to be the most important factor in assessment.

54.3.113 The majority of minor roads are being retained, therefore it is anticipated that communities accessing local facilities by car would not experience significant adverse impacts. However, the access of pedestrians and others to local facilities may be adversely impacted as a result of diversions and loss in amenity value of some of the paths crossing the AWPR.

54.3.114 Where traffic volumes are expected to decrease, including sections of the A90, A96, A944 and A93, communities would experience a benefit from easier crossing of these roads improving access to facilities and recreation areas.

54.3.115 Although the AWPR may have a cumulative negative impact on access in the Aberdeen and Aberdeenshire countryside, mitigation provisions aim to keep the countryside open for the development of a wider strategic network of paths as implemented by Aberdeen City Council and Aberdeenshire Council Core Path Network Plans.

The Proposed Scheme and Future Major Development

54.3.116 Walton Road, to the north of the A96 is currently being severed by the AWPR. A diversion is in place, resulting in an overall Moderate adverse impact on pedestrians and others. The planning application for a major development which includes a business park and a Park and Ride, at Chapel of Stoneywood, Dyce Drive is likely to further impact on Walton Road Right of Way.

54.3.117 This proposed development area of 108ha could potentially sever the footpath to the east of the AWPR. The cumulative impact of the AWPR and the proposed development on pedestrians and others using this path to access Kirkhill Forest may be severe.

Disruption Due to Construction

Entire Proposed Scheme Effects

54.3.118 Noise, vibration, dust and loss of amenity due to the operation of equipment or from the movement of heavy construction traffic would arise over the full length of the proposed scheme. Construction activities can impact on routes utilised by different types of user including pedestrians and cyclists. If works are undertaken concurrently on different sections of the proposed route then the impact would be heightened, causing long diversion routes, access restrictions and increased temporary severance of communities. There is also the potential for impacts on the natural environment through disturbance to wildlife, pollution of watercourses or by storage of materials on ecologically valuable land. The more extensive the area of works, the greater the impacts on these receptors.

54.3.119 In terms of air quality, the construction works undertaken on the complete length of the proposed scheme would cumulatively risk dust-soiling effects at approximately 360 properties within a 100m corridor. It is estimated that with mitigation there are also approximately 160 properties that might be at risk of higher PM_{10} concentrations at 50m from the scheme.

The Proposed Scheme and Future Major Development

54.3.120 The construction effects are temporary, though in conjunction with other development schemes in the study area may result in greater adverse impacts on the local environment. For example, in combination with proposed housing developments, the land-take required for provision of site compounds, storage of materials and necessary construction plant in the local area would be increased. Disruption of traffic flows and congestion is likely to be greater as diversion routes and stoppage time at roadworks are increased. Air quality and noise levels in the surrounding area are likely to be cumulatively amplified the greater the number of developments undertaken concurrently. The sourcing and quantities of materials for construction, as well as the location of any borrow pits, would need to be planned, taking into consideration other nearby developments and their requirements.

Plans and Policies

Entire Proposed Scheme Effects

54.3.121 This section addresses the implications in terms of compliance of the entire proposed scheme with the relevant plans, policies and guidance at a national, regional and local level.

54.3.122 The proposed scheme is considered to comply with the aim of the Scottish Executive White Paper 'Scotland's Transport Future' (2004) to promote an effective and efficient transport system. Although NEST (the Aberdeen and Aberdeenshire Structure Plan 2001 – 2016 North East Scotland Together) does not expressly include the Fastlink section, the proposed scheme is supported by NEST policy and statements.

54.3.123 The relevant development plans to the Northern and Southern Legs of the proposed scheme are the Aberdeen City District Wide Local Plan (Adopted September 1991) (ACLP), the Finalised

Aberdeen Local Plan Green Spaces New Places (Published in 2004 with further proposed modifications published in August 2005) (FACLP) and the Aberdeenshire Local Plan (Adopted June 2006) (ALP).

54.3.124 The Northern and Southern Legs of the proposed scheme are located within the Green Belt. The Fastlink is located within the countryside where the restrictive policies of the Green Belt are not applicable. The ACLP and FACLP both state that there will be an embargo on all development within the Green Belt, with certain exceptions, not including infrastructure development. However, separate provision for the principle of locating the proposed scheme within the Green Belt is provided elsewhere in the ALP. NEST, which sets the framework for local plan policy, recognises that adjustments are necessary to allow for the development of other plan policies, such as the AWPR which due to locational and operational criteria cannot be accommodated outwith the Green Belt designation. Therefore, cumulatively the proposed scheme is broadly compatible with Green Belt policy.

54.3.125 With regards to cultural heritage, planning policy at all levels and within the three Local Plans requires the protection of Scheduled Ancient Monuments and Listed Buildings. The impacts upon the identified sites of cultural heritage interest range from None to Substantial, with the majority being Slight (adverse). However, there is also the potential for unknown archaeological remains to be present although there is insufficient information to assess the importance of such remains. Cumulatively, conflict with the relevant cultural heritage policies is not envisaged.

54.3.126 In terms of ecology and nature conservation, mitigation measures will be implemented. These would include minimising disturbance to protected species during construction, creating habitats and appropriately designing culverts, underpasses and wildlife bridges. Nonetheless, residual impacts including habitat loss and fragmentation across the entire proposed scheme could significantly conflict with planning policy which seeks the protection of sites of nature conservation value.

54.3.127 The loss of some 55ha of prime quality land over the entire scheme is not envisaged as significantly conflicting with planning policy requirements for the protection of prime quality agricultural land.

54.3.128 Diversions and loss of amenity for pedestrian, cyclist and equestrian access routes throughout the study area may conflict with policies to enhance and protect these routes.

54.3.129 Substantial impacts upon the landscape and visual character as a result of the proposed scheme have been identified along the Dee Valley in particular. Whilst these impacts cannot be wholly avoided, mitigation measures such as landscape planting will be provided to reduce the level of the impact. Nonetheless, planning policies require the protection and enhancement of areas of landscape character and value such as the Dee Valley. The identified Substantial impact, therefore, represents a conflict with planning policy.

54.3.130 The minimisation of pollution and the protection of the quality of watercourses throughout the proposed scheme corridor is reiterated throughout the policies of the ACLP, FACLP and ALP. However, watercourses in the vicinity of the proposed scheme have been identified as requiring extensive realignments and culverting. These changes may cause adverse impacts upon the water environment, and thus potentially conflict with planning policy.

54.3.131 Overall potential conflicts with the relevant planning policy have been identified in relation to ecology and nature conservation, public access, landscape and visual and the water environment. However, the proposed scheme as a major infrastructure development within the Green Belt is supported within NEST, the ACLP and FACLP. The ALP, whilst not containing policies supportive of locating the development within the Green Belt, does include supportive transport and infrastructure policy.

The Proposed Scheme and Future Major Development

54.3.132 The principle of the proposed scheme is provided for within the ACLP, FACLP and ALP. The major applications identified within the list of major developments relative to the Southern Leg have been provided for under the provisions of these local plans where, in dealing with applications for planning permissions, the local authority shall have regard to the provisions of the development plan. The remainder of the major developments identified have been allocated for development through the development plan process. No conflict has been identified as the proposed scheme and major developments have already been assessed in the same policy context and arenas throughout local plan review.

54.4 Mitigation and Conclusions

54.4.1 Appropriate mitigation and conclusions and recommendations in relation to this Cumulative Impact Assessment are provided within Chapters 56 (Mitigation) and 59 (Conclusions), whilst a summary of the key scheme impacts is provided within Chapter 53 (Summary of Key Scheme Impacts).