

## **53 Summary of Key Scheme Impacts**

### **53.1 Introduction**

53.1.1 Table 53.1 below contains a summary of the environmental impacts for all three sections of the proposed scheme. For the purposes of illustrating the potential for cumulative impacts, the table focuses on residual impacts of Moderate significance or above, for the following environmental parameters:

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

53.1.2 The residual impact (i.e. following implementation of mitigation) is described, and where relevant, the level of impact significance is provided. Impacts are adverse unless otherwise stated.

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Table 53.1 - Summary of Key Impacts

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
<b>Land Use</b>	<b>Agricultural Land</b>		
	Net loss of approximately 618ha agricultural land (51.65ha prime quality).	Moderate	
	77 land interests experiencing residual impacts of Moderate significance or above (6 with viability affected).	Moderate	
	<b>Demolition of Property</b>		
	Demolition of 13 residential properties (10 Southern Leg, 3 Northern Leg).	Substantial	
	Demolition of International School and associated buildings.	Adverse (not quantified)	
	<b>Commercial Impacts</b>		
	Loss of commercial land (17 locations) and one business affected by noise.	Adverse (not quantified)	
	Improved access to north and south for 9 businesses.	Beneficial (not quantified)	
	Change (diversions/modifications) to businesses access (8 businesses adversely affected).	Adverse (not quantified)	The majority of access changes are minor and result in residual impacts assessed as neutral.
	<b>Development Land</b>		
	Amenity/ land take affecting planning applications and development land.	Mostly adverse (not quantified)	
	Improved access arrangements and transport links at 14 locations (includes Planning Applications, Opportunity Sites and Future New Communities).	Beneficial (not quantified)	
<b>Community Land</b>			
Small losses of woodland at 24 locations.	No significant impacts	Woodland planting will help to offset impacts	
<b>Geology, Contaminated Land &amp; Groundwater</b>	Excavations will reach the solid geology in places. Minor occurrences of contaminated land identified. Risk of flow or contamination impacts on numerous private wells. Impact of blasting on mass rock and on groundwater.	No significant impacts	Further investigations are ongoing to reduce risk of impacts on private water supplies and sites of ecological sensitivity
<b>Water Environment</b>	Numerous water crossings and road drainage outfalls throughout scheme have potential for impacts on hydrology, quality, geomorphology. Northern Leg: 23 culverts, 1 bridge, 4 buried structures, 1 aqueduct, 14 realignments, 8 outfalls. Southern Leg: 14 culverts (including 2 extensions), 1 bridge, 1 buried structure, 13 realignments, 6 outfalls. Fastlink: 12 culverts (incl. 1 extension), 2 buried structures, 12 realignments, 4 outfalls	Northern Leg: Substantial operational impacts at Gough Burn, Craibstone Burn, Bogenjoss Burn Construction impacts moderate at Gough Burn, Moderate/ substantial at Bogenjoss Burn Southern Leg: Moderate construction impacts at Kingcausie Burn. Fastlink: Moderate operation & construction impacts at Limpet Burn	Mitigation includes: Best practice during construction to minimise sediment and pollution release; Lining of filter drains in particularly sensitive watercourses/waterbodies; Detailed construction method statements (where required) to be agreed with SEPA prior to start of works as part of CAR process

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
Ecology and Nature Conservation	<b>Direct Mortality</b>		
	Increased risk of RTAs owing to increase in the number and speed of vehicles throughout entire study corridor.	Risk of red squirrel mortality at Craibstone Woods, East Woodlands, Monument Wood, Guttrie Hill Wood and Milltimber is considered to be of major significance. Risk of red squirrel mortality at Kirkhill Forest, Standingstones Wood and Gairnhill Wood is considered to be of moderate significance.	The risk of direct mortality is of minor significance or less for most species throughout the scheme corridor. Badger and otter fencing will reduce mortality from RTAs. Sympathetic landscape planting, such as grass verges between the carriageway and any areas of scrub or woodland, and planted overbridges will minimise RTAs for birds and bats.
	<b>Habitat Loss</b>		
	Land-take required by the scheme will result in habitat loss throughout the corridor.	Loss of red squirrel habitat at Corsehill Wood and Littlejohn's Wood will be of moderate significance. However, as replacement planting matures, this impact will reduce to being of minor significance in the long term.	Replacement planting and habitat creation will reduce habitat loss impacts to less than moderate significance in most locations.
	<b>Fragmentation &amp; Severance</b>		
	The scheme will act as a barrier for many species, creating fragmentation and severance impacts in both terrestrial and aquatic habitats.	Moderate impacts will remain for otter at Craibstone Burn, Green Burn and Bogenjoss Moderate severance impacts on badger and red squirrel at Milltimber are likely. Moderate severance of habitat in the Kingcausie area is envisaged.	Mitigation will reduce most fragmentation and severance impacts to less than moderate significance. Measures include wildlife bridges, planting to connect valuable habitats, culverts and bridge design to include design features to encourage their use by affected species, bat and bird boxed, bird and bat foraging habitat creation.
	<b>Disturbance</b>		
	Construction and operational noise and increased human activity are expected	Moderate disturbance effects are likely on red squirrel populations at Monument Wood, Kirkhill Forest, East Woodlands and Standingstones Wood.	Best practice during construction, and planting, habitat creation and effective wildlife crossing mitigation will reduce disturbance effects.
Landscape	<b>Hill Type</b>		
	Stranog LLCA: Introduction of new road at grade, on embankment and in cutting through the visually prominent landforms of Cookney, Rothnick and Stranog Hill.	Substantial adverse impacts	Mitigation will include planting, screening, habitat provision, false cuttings, the easing of slopes and the use of drystone walls.
	Craigingles LLCA: Introduction of a large rock cutting across the hillside and loss of mature woodlands.	Substantial adverse impacts	

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
Landscape [continued]	Beanshill and Fifeshill LLCA: Introduction of cuttings, embankments, realigned side roads, overbridges, ponds and junctions.	Substantial adverse impacts	
	Auchlea LLCA: Introduction of junction with A944 and associated street lighting, slip roads and realigned local roads. Severance of field pattern and boundaries.	Moderate to Substantial adverse impacts	
	Tyrebagger Hill LLCA: Introduction of traffic movement, cuttings embankment, realigned side roads and overbridges.	Moderate adverse impacts	
<b>Open Farmland Type</b>			
	Blaikiewell LLCA: Introduction of a junction linking the Fastlink and Southern Leg, lighting, ponds, major earthworks and realignment of local roads in agricultural basin with extensive visibility.	Moderate to Substantial adverse impacts	Mitigation will include planting, screening, habitat provision, false cuttings, the easing of slopes and the use of drystone walls.
	Muchalls LLCA: Introduction of the Fastlink in a naturally exposed area enveloping the Burn of Muchalls. Severance of fields and the introduction of cuttings and embankments.	Substantial adverse impacts	
	Megray LLCA: Junction from the A90, diversion of Megray Burn and the introduction of a deep cutting, ponds and slip roads. Introduction of the cutting into views from Stonehaven.	Moderate adverse impacts	Mitigation will include planting, screening, habitat provision, false cuttings, the easing of slopes and the use of drystone walls.
	Haremos and Clinterly / West Brimmond LLCA: Introduction of cuttings, embankments, realigned side roads, overbridges, ponds and junctions.	Moderate to Substantial adverse impacts	
	Auchlea and Merchants Croft LLCA: Introduction of cuttings, embankments, realigned side roads, overbridges, ponds and junctions with associated lighting.	Moderate adverse impacts	
	Goval LLCA - Area of Landscape Significance: Introduction of the AWPR, Goval junction, ponds and realignment of the A947.	Substantial adverse impacts	
	Newton (south), Potterton and Perwinnes LLCA: The introduction of traffic movement, cuttings embankment, realigned side roads, overbridges and junctions which will be lit.	Moderate adverse impacts	

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
Landscape [continued]	<b>Wooded Farmland Type</b>		
	Kempstone LLCA: Introduction of an embankment and underbridge for Limpet Burn, embankments and realignment of local access roads.	Moderate adverse impacts	Mitigation will include planting, screening, habitat provision, false cuttings, the easing of slopes and the use of drystone walls.
	Netherly / Alries LLCA - Area of Landscape Significance: Introduction of an embankment on the approach to the River Dee crossing and the loss of mature woodland. Adverse impacts on the setting of Kingcausie House.	Moderate to Substantial adverse impacts	
	Craigton, Broomfold and Kingswells LLCA: Introduction of cuttings, embankments, realigned side roads, overbridges, ponds and junctions with associated lighting.	Moderate adverse impacts	
	Craibstone LLCA: Introduction of the AWPR, A96 underbridge, A96 link road, A96 junction, A96 roundabout and ponds will sever the landform with the loss of significant areas of woodlands.	Substantial adverse impacts	
	Red Moss LLCA: The introduction of traffic movement, cuttings embankment, realigned side roads, overbridges and junctions which will be lit.	Moderate adverse impacts	
	<b>Valley Type</b>		
	Burn of Muchalls LLCA Introduction of embankments, cuttings, new underpass, overbridge, ponds, ditches and access roads.	Substantial adverse impacts	Mitigation will include easing of gradients, planting, false cuttings, drystone walls and sensitive pond design.
	Dee Valley LLCA - Area of Landscape Significance: Introduction of a new viaduct bridge spanning the river and ponds within a relatively tranquil area despite busy roads to the north and south and the existing bridge. Permanent adverse impact on the scenic quality of the area and on views into and along the valley.	Substantial to Severe adverse impacts	
	Lower Goval LLCA - Partly within Area of Landscape Significance: Introduction of a new bridge spanning the river and ponds and realignment of the B977. Bridge links the industrial areas at Dyce with the farmlands to the north side of the river.	Moderate to Substantial adverse impacts	
<b>Urban Type</b>			
Milltimber LLCA: Introduction of a large cutting through the south facing slope north of the River Dee with the loss of dwellings and a school. Impact on the landscape setting of the area due to views of road cuttings.	Substantial to Severe adverse impacts	Mitigation will include planting, screening and drystone walls.	

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
Visual	<b>Built Receptors</b>		
	<p>The introduction of the road, associated earthworks, structures, fast moving traffic and lighting into views from properties and settlements.</p>	<p>Significant impacts (Moderate or greater) during the Winter Year of Opening for 622 built receptors in Northern Leg, 782 in Southern Leg and 171 in Fastlink. Combined total of 1575 (56.6%) built receptors.</p> <p>By Summer 15 Years After Opening, mitigation will have reduced significant impacts for built receptors to 360 in Northern Leg, 436 in Southern Leg and 77 in Fastlink. Combined total of 873 (31.4%) built receptors.</p>	<p>Mitigation includes drystone walls, grading out of embankment and cutting slopes and planting.</p>
	<b>Outdoor Receptors</b>		
	<p>The introduction of the road, associated earthworks, structures, fast moving traffic and lighting into views from outdoor spaces.</p>	<p>Significant impacts (Moderate or greater) during the Winter Year of Opening for 53 outdoor receptors in Northern Leg, 174 in Southern Leg and 101 in Fastlink. Combined total of 328 (74.2%) outdoor receptors.</p> <p>By Summer 15 Year After Opening, mitigation will have reduced significant impacts for outdoor receptors to 45 in Northern Leg, 137 in Southern Leg and 83 in Fastlink. Combined total of 265 (60.0%) outdoor receptors.</p>	<p>Mitigation includes drystone walls, grading out of embankment and cutting slopes and planting.</p>
Cultural Heritage	<b>Direct Impacts</b>		
	<p>Direct impacts on sites of cultural heritage importance.</p>	<p>Northern Leg – Moderate direct impacts on 3 sites and direct impacts on 8 sites of unknown importance.</p> <p>Southern Leg – direct impacts on 5 sites of unknown importance.</p> <p>Fastlink – direct impacts on 3 sites of unknown importance.</p>	<p>As a form of mitigation, targeted appropriate evaluation including geophysical surveys and trial trenching will be implemented prior to works commencing. There is the potential for the discovery of unknown cultural heritage features.</p>
	<b>Indirect Impacts</b>		
	<p>Indirect impacts on the settings of sites of cultural heritage importance.</p>	<p>Northern Leg – Substantial indirect impacts on 3 sites and a Moderate indirect impact on 1 site.</p> <p>Southern Leg - Substantial indirect impacts on 6 sites and a moderate indirect impact on 1 site.</p> <p>Fastlink – Substantial indirect impacts on 2 sites and a moderate indirect impact on 1 site.</p>	<p>Landscape planting and earthwork creation help to mitigate indirect impacts on cultural heritage features .</p>

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
Air Quality	<b>Impacts on Health</b>		
	Changes in concentrations of key traffic-related air pollutants at locations where members of the public will be exposed, taking account of the scheme itself and all major roads within 10km of the scheme.	Northern Leg - Moderate adverse to Moderate beneficial. Southern Leg - Moderate adverse to Slight beneficial. Fastlink - Moderate adverse to Moderate beneficial.  More adverse than beneficial impacts within 500m of the route, but more beneficial than adverse impacts within 10km of the route.	Main benefits in built-up areas where air quality currently poor . Over the entire study area, 19,000 properties would experience a deterioration in air quality. 76,000 properties would experience improved air quality. Some exceedences of air quality objectives and European Union limit values would be prevented and none would be caused.
	<b>Impacts on Sensitive Ecosystems</b>		
	Changes in concentrations and deposition rates of key traffic-related air pollutants over designated ecological sites near to any major road within 10km of the scheme. Air pollution concentrations over organic farmland near to the proposed scheme itself are also assessed.	No significant effects to designated ecological sites. Pollution levels over organic farmland to remain low.	
	<b>Wider Scale Impacts</b>		
	Changes in pollutant emissions from all vehicles using major roads within 10km of the scheme that may affect regional scale pollution levels	Entire study area - extremely small to large increases in pollutant emissions.	
	<b>Greenhouse Gases</b>		
Changes in carbon dioxide emissions from all vehicles using major roads within 10km of the scheme.	Entire study area - small increase in emissions.		
Traffic Noise and Vibration	<b>Changes in the level of traffic noise</b>		
	Changes in the level of traffic noise for properties within 500m of the proposed scheme.	Northern Leg – Substantial beneficial to Substantial adverse. Southern Leg – Moderate/Substantial beneficial to Substantial adverse. Fastlink – Substantial beneficial to Substantial adverse.  More adverse than beneficial impacts.	Mitigation includes lower noise surfacing throughout the scheme and barriers and false cuttings at specified locations.  7 properties in Northern Leg, 51 in Southern Leg and 2 in Fastlink may qualify for noise insulation as per Noise Insulation (Scotland) Regulations 1975.
	<b>Wider Scale Impacts</b>		
Indirect changes to noise levels as a consequence of changes to traffic flows and speeds on the existing road network.	1865 fewer people out of a total of 44,224 people (1.8%) would be annoyed by noise with the proposed scheme in place than would be without the scheme.	No mitigation proposed.	

**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
<b>Pedestrians and Others</b>	<b>Increase in Journey Length</b>		
	Increase in journey length along some paths and minor roads as a result of diversions.	Northern Leg – Severe to Moderate impacts Southern Leg – Major to Moderate impacts Fastlink – Moderate impacts	Closures avoided through provision of diversions, overbridges and alternative routes.
	<b>Amenity Value</b>		
	Reduction in amenity value of journeys made by pedestrians and others as a result of visual, noise, air and traffic impacts.	Moderate adverse impacts	Reduced traffic on local roads will have amenity benefit
	<b>Severance from Community Facilities</b>		
Increases in traffic, journey length and character may create severance from community facilities, such as shops, schools and recreational areas.	Severe impacts at Milltimber & Peterculter Moderate impacts around Craibstone and Cookney	Reduced traffic on local roads can improve access to community facilities	
<b>View From the Road</b>	<b>Northern and Southern Legs</b>		
	Winter year of opening and summer 15 years after opening: change to the views currently experienced by travellers on the A90.	Significant beneficial impacts	A more pleasant journey than the enclosed urban journey that is currently experienced by travellers through Aberdeen City.
	<b>Fastlink</b>		
Winter year of opening and summer 15 years after opening: change to the views currently experienced by travellers on the A90.	No significant impacts	Views will be very similar to those from the B979.	
<b>Driver Stress</b>	<b>Predicted Increases</b>		
	A96 Blackburn to Craibstone eastbound. A947 Aberdeen to Oldmeldrum to Turriff southbound.	Driver stress levels are expected to be High along the Northern Leg. Increases in driver stress on local road network range from Moderate to High.	The proposed scheme has been designed to the Scottish Executive's current design standards and appropriate mitigation has already been incorporated into the preliminary design.
	<b>Predicted Decreases</b>		
The A90 (T) Stonehaven to Newtonhill The A90 (T) Newtonhill to Portlethen northbound (High to Moderate), southbound A90 (T) Murcar Industrial Estate to Balmedie southbound A90 (T) Charleston to Bridge of Dee A96 Blackburn to Craibstone southbound B999 Aberdeen to Tarves westbound B9077 South Deeside (east of B979) eastbound The A944 Aberdeen to Westhill Road westbound (w of Kingsford Industrial Estate) The B979 between A93 and A96 southbound	Driver stress levels are expected to be Low along the Southern Leg and Fastlink. Decreases in driver stress on local road network will be from High to Moderate.	The proposed scheme has been designed to the Scottish Executive's current design standards and appropriate mitigation measures have already been incorporated into the preliminary design.	



**Aberdeen Western Peripheral Route**  
**Environmental Statement 2007**  
**Part E: Cumulative Impact Assessment**

Environmental Parameter	Description of Residual Impact (following mitigation)	Impact Significance	Comment
<b>Disruption Due to Construction</b>	<b>Noise, Dust, Loss of Amenity</b>		
	<p>Noise nuisance likely at properties close to the scheme</p> <p>A risk of soiling properties within 100m of the proposed length of the scheme. A risk of enhanced PM<sub>10</sub> concentrations for properties within 50m of the proposed length of the scheme.</p> <p>Disturbance to wildlife and loss of amenity for local residents, pedestrians etc is likely</p>	Significant adverse overall	Control measures for noise and dust will be implemented. Contractor must comply with approved Environmental Management Plan.
<b>Policies and Plans</b>	<b>Ecology and Nature Conservation</b>		
	Habitat loss and fragmentation likely	Conflict with ecological and nature conservation policies is envisaged.	Ecology mitigation will be implemented.
	<b>Public Access</b>		
	Diversions and loss of amenity likely for some pedestrian, cyclist and equestrian access routes.	Conflict with planning policies which seek to protect and enhance public access.	Crossing points and diversions provided where appropriate
	<b>Landscape and Visual</b>		
	Substantial impacts on the landscape and visual character of the area, as a result of the Northern and Southern Legs sections of the proposed scheme in particular, have been identified.	Planning policies require the protection and enhancement of areas of landscape character and value such as the Dee Valley. A conflict with planning policy has therefore been identified.	While these impacts cannot be wholly avoided, the provision of mitigation measures such as landscape planting will reduce impacts.
<b>Water Environment</b>			
	Numerous watercourses will be culverted and/ or realigned.	Planning policies require the minimisation of pollution and protection of the quality of the watercourses. A conflict with planning policy is considered possible.	Implementation of best practice and SUDS.