

### **3. Environmental Issues**

#### **3.1 Introduction**

3.1.1 The Scheme has been developed through a 3-stage scheme assessment process in accordance Standard *TD 37/93 Scheme Assessment Reporting*, of the Design Manual for Roads and Bridges (DMRB).

3.1.2 The key environmental issues to be assessed are reported below with a summary of the main receptors.

##### **Land Use**

3.1.3 At present, there is a strong community focus within the study area. The Shore Road is a residential area consisting of a mixture of semi-detached houses and bungalows and detached villa-type houses. Facilities along this part of the A2 include Ravenhill and Greenisland Care Homes, a Spar shop, Belfast High School, University of Jordanstown and Loughshore park.

3.1.4 The alignment of the proposed route would require the demolition of some private residential properties, as well as some commercial and community facilities. There would also be land take of approximately 8.38 hectares.

##### **Geology and Soils**

3.1.5 The study area is located on a coastal plain carved from soft Triassic mudstones on the southeast edge of the Antrim Plateau.

3.1.6 The potential issues relating to geology and soils as a result of the proposed development are; soil loss; physical damage to soil, including soil compaction as a result of heavy construction vehicle movements and; alteration to groundwater levels and flow.

##### **Water Quality and Drainage**

3.1.7 There are a number of small watercourses that drain from the adjacent hillsides into Belfast Lough, underneath the existing A2 road, the largest of which is the Silver Stream.

3.1.8 The Scheme has the potential to affect water quality during both construction and operation as a result of pollution run-off. The proposed route would cross several small watercourses and would require a roundabout to be constructed immediately adjacent to the Jointure Bay Stream Site of Local Nature Conservation Importance (SLNCI). Appropriate crossings / culverts will be required which could impact on flow patterns, which in turn has the potential to impact upon invertebrate species. If not correctly designed, such crossings can also act as a physical barrier to mammals and could lead to disruption of possible otter movements.

##### **Ecology and Nature Conservation**

3.1.9 The nearest statutory designated site for nature conservation is Belfast Lough, designated as a Ramsar site, Special Protection Area (SPA) and Area of Special Scientific Interest (ASSI). At the eastern end of the study area is Jointure Bay Stream SLNCI, which is a non-statutory designated site.

- 3.1.10 No significant or direct impacts would be expected upon the Belfast Lough SPA and Ramsar site, due to the separation distance between the Scheme and the shoreline. There are likely direct and permanent impacts upon Jointure Bay Stream SLNCI due to the construction of a roundabout in close proximity to, or directly above, the channel.

#### **Landscape Effects**

- 3.1.11 The proposed route falls into two Landscape Character Areas as defined by the Northern Ireland Character Assessment (EHS 1999). The areas are essentially separated by the Silver Stream, to the west is the "Three and Six Mile Water Valley" and to the east is the "Carrickfergus Shoreline".
- 3.1.12 The visual effects would be perceived by receptors (particularly residential properties) adjacent to the road, those visiting/passing through- (including pedestrians, cyclists and vehicular users), and distant hilltop viewers. The visual effects the receptors would also perceive include a much larger area of road surfacing.

#### **Cultural Heritage**

- 3.1.13 The desk-top archaeological assessment of historic sites and buildings within the study area identified four relevant sites; Castle Lug or *Cloch na Larty*, the remains of a tower house; Rath, a fortified Iron Age settlement; Souterrain, an underground structure and; unnamed sites within the University of Ulster. There are also six listed buildings within study area.
- 3.1.14 The Scheme will require some land take from the frontage of Castle Lug but the structure itself would not be affected. The setting of the listed buildings is unlikely to be affected upon and an archeologist will oversee any works prior to construction.

#### **Air Quality**

- 3.1.15 There are approximately 250 residential properties within a 200m corridor of the Scheme, the majority of which are located adjacent to the existing A2 Shore Road.
- 3.1.16 The existing traffic levels already result in a significant level of emissions such as PM<sub>10</sub>, NO<sub>2</sub>, CO and hydrocarbons along the route, however it is anticipated that the introduction of the Scheme may result in improved air quality for the nearest properties. This is due to the fact that the stop-start driving of congested traffic can result in much higher emission rates than smooth driving in free-flowing traffic. Therefore, a reduction in congestion could potentially result in a beneficial impact on air quality.

#### **Traffic Noise and Vibration**

- 3.1.17 There are approximately 400 properties within 300m of the Scheme corridor. Not included within this are the noise sensitive properties at the Ravenhill and Greenisland House care homes, Greenisland Methodist Church, Church of the Nazerene, the factory site near Seapark and the Spar shop.
- 3.1.18 Changes in the extent of the existing noise contours, and their proximity to noise sensitive receptors are of concern. Research has shown that it is unlikely that traffic borne vibrations can severely damage buildings, however, under certain conditions low frequency vibration can cause annoyance to occupiers of buildings.

#### **Pedestrians, Cyclists, Equestrians and Community Effects**

- 3.1.19 There is currently a footpath along the Shore Road, but while it is of good quality in some places, it is poor and indistinct elsewhere. The traffic on Shore Road currently

causes some severance for pedestrians who wish to cross the road. There is only one formal crossing point available, at Station Road. There are a number of community facilities along Shore Road including; a Spar convenience store; Ravenhill and Greenisland Care Homes; Loughshore Park; Belfast High School and; University of Ulster.

- 3.1.20 There may be severance and disturbance effects upon the local community and community facilities due to construction.

#### **Vehicle Travellers**

- 3.1.21 Driver stress can be defined as the adverse mental and physiological effects experienced by the driver traversing a road network. The A2 Shore Road currently experiences a daily two-way traffic flow of up to some 35,000 vehicles, which can give rise to significant periods of congestion at peak times and can lead to cars diverting to other roads such as the B90. This congestion can lead to significant driver stress caused by the frustration of long queues.

- 3.1.22 The potential issues relating to vehicle travelers as a result of the Scheme include: disruption to local traffic and road users from severance and increased vehicle movements associated with construction activities; disruption to local receptors due to noise generation and air emissions and; possible benefits to peak time road users as a result of decreased travelling time.

#### **Disruption Due to Construction**

- 3.1.23 Construction effects can be broadly differentiated between those that arise as a result of the works being undertaken, and those that are a function of the way in which the works are carried out. Nowadays it is increasingly common for construction contractors to need to meet a pre-defined set of standards and to comply with procedures intended to reduce environmental effects.

- 3.1.24 The main activities associated with the Scheme would be: site clearance; bulk earthworks; drainage and utilities; road works, land take, retaining wall construction and; site reinstatement and landscape planting. The effects of these activities are temporary but potentially significant as they are likely to cause considerable disruption during construction.

#### **Policies and Plans**

- 3.1.25 The emerging development plan of relevance to the Scheme is the Belfast Metropolitan Area Plan (BMAP) 2015. The plan details policies for the protection of residential amenity, landscapes, cultural heritage and many other aspects. The Scheme falls within both the Newtownabbey and Carrickfergus Borough Councils areas.

- 3.1.26 The main impact in planning terms of the Scheme is the potential effect on the Shore Road Area of Townscape Character (ATC).

### **3.2 Previous Environmental Studies**

- 3.2.1 The Stage 1 Report assessment examined a range of eight broadly based strategies to determine whether they could provide a suitable solution, these are listed below;

- Strategy S1 – B90 Corridor Improvements
- Strategy S2 – New Road/Rail Corridor

- Strategy S3 – Public Transport Improvements
- Strategy S4 – A2/B90 Links
- Strategy S5 – New Road Inland Corridor
- Strategy S6 – Upgrade Junctions Only
- Strategy S7 – On-line Improvements
- Strategy S8 – New Road Coastal Corridor

3.2.2 In the Stage 2 assessment, most of these options were discounted and only two, S5 and S7, were taken forward for further investigation. A third option was also developed, which is a combination of S5 and S7. A full description of the alternatives considered throughout the three-stage process in accordance with Standard *TD 37/93 Scheme Assessment Reporting* of the Design Manual for Roads and Bridges can be found in Chapter 4 – Scheme Objectives.

3.2.3 A full explanation of the work undertaken at Stage 1 is reported in the Stage 1 Scheme Assessment Report November 2005 (Stage 1 Report).

3.2.4 A full explanation of the work undertaken at Stage 2 is reported in the Stage 2 Scheme Assessment Report August 2006 (Stage 2 Report).

### **3.3 References**

- Design Manual for Roads and Bridges, Volume 11, Environmental Assessment. Department of the Environment for Northern Ireland et al (August 1994, as amended up to August 2006).