Department for Regional Development- Roads Service

A55 KNOCK ROAD WIDENING SCHEME

Public Inquiry

November 2010

Proof of Evidence – DRD A55/30

(Environmental Statement)

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1.0 INTRODUCTION

1.1 This statement is made by Raymond Holbeach, Regional Director of RPS Planning & Environment Ltd.

1.2 I have over 20 years of experience in public and private sector environmental consultancy works. I have extensive experience of project management of numerous Environmental Statements for road schemes throughout Ireland. I am a Chartered Landscape Architect of the UK Landscape Institute and a member of the Institute of Environmental Management and Assessment.

1.3 I have acted as Environmental Project Director for the A55 Knock Road Widening Scheme. As Environmental Project Director I have been responsible for providing environmental guidance to the overall project team and as well as the co-ordination of the environmental team in production of the Environmental Statements (ES) (ref. DRD A55/16).

2.0 SCOPE OF PROOF

2.1 The Environmental Statement assesses the topics set out in the Design Manual for Roads and Bridges, Volume 11: Environmental Assessment (ref. DRD A55/20), which lists twelve environmental topics as follows:

- Land use;
- Geology and soils;
- Road Drainage and the Water Environment;
- Ecology and nature conservation;
- Landscape Effects;
- Cultural Heritage;
- Air Quality;
- Noise and Vibration;
- Pedestrians, Cyclists, Equestrians and Community Effects;
- Vehicle Travellers;
- Disruption Due to Construction;
- Policies and Plans;

2.2 My evidence summarises all of the twelve topics listed above. Specialists may be made available for responding to detailed queries on these subjects.

3.0 STRUCTURE OF THE ENVIRONMENTAL STATEMENT

3.1 The Environmental Statement was issued in accordance with European Community (EC) Council Directive 85/337/EEC as amended by EC Council Directive 97/11/EC and Directive No. 2003/35/EC of the European Parliament and Council and required by Part V of the Roads (Northern Ireland) Order 1993 as substituted by the Roads (Environmental Impact Assessment) Regulations (Northern Ireland) 1999 and amended by The Roads (Environmental Impact Assessment) Regulations (Northern Ireland) 2007.

3.2 The Environmental Statement is presented in 2 volumes:

- Volume 1: Non-Technical Summary.
- Volume 2: Environmental Statement: Main Text, Appendices (including Environmental Figures).

3.3 The assessment for each of the key environmental topics is reported by way of a common format:

- An introduction describing the purpose of the assessment.
- A description of the methodology used to undertake the assessment (including an explanation of any limitations).
- A description of the aspects of the existing environment relevant to the environmental topic.
- An assessment of the impacts (including cumulative) of the proposed scheme related to the topic.
- Recommendations for mitigation measures to eliminate or reduce any significant negative impacts identified.
- A statement of the residual impacts assuming that the recommended mitigation measures are fully and successfully implemented.

3.4 Four options were developed and assessed prior to the production of the Environmental Statement. The Preferred Options Report (ref. DRD A55/22) was completed in early 2007.

3.5 The preferred option will widen the carriageway between Knockwood Park and Kings Road to two lanes in each direction with additional provision for right turning vehicles. Each set of lanes – in each direction - will measure 3.5m and 3.3m in width. Turning

pockets will be 3.5m wide. A combined footway/cycleway on the northern side (City side) will vary from 4.5m to 5.0m width and on the southern side (Dundonald side) will be a constant 3.5m width. The link road between Ascot Park and Shandon Park is included. A further link road between Kingsden Park and Kensington Road will provide access to Kingsden Park and properties located at 60-68 Knock Road.

3.6 The Preferred Options Report is included in Appendix 1.1 of the Environmental Statement.

3.7 A copy of the Environmental Statements statutory consultee's letters are included as an Appendix (Appendix 3.1) to the ES.

4.0 LAND USE

4.1 Methodology

4.1.1 This section reports the findings of the assessment on existing land use. This assessment has been carried out in accordance with the DMRB, Volume 11 Section 3 Part 6 Land Use. Areas assessed included, the impacts on utilities in the area of the proposed scheme, identification of existing land uses (housing, commercial, nursing, and recreational land), examination of planning applications in the vicinity of the proposed road widening scheme.

4.1.2 Demolition of Private Property:- Residential, The direct impacts upon residential property arising from demolition or landtake from residential lands (gardens, driveways, etc.) was assessed. Road schemes can also cause nuisance impacts to residential property. These are broadly compared by examining the number of occupied properties within specified distance bands from the proposed route. Detailed consideration of noise and visual impacts were considered separately in Sections 10, and 8 respectively of the Environmental Statement.

4.2 Findings

4.2.1 The land use in the study area is dominated by residential properties. Commercial land use is limited within the study area and is restricted to the western extent of the scheme.

4.2.2 Notable community and health care related land uses within the study area are Knock Presbyterian Church and Towell House Nursing Home, both located at the northern extent of the scheme, and the Marie Curie Centre on the existing A55.

4.2.3 Shandon Park Golf Course forms a feature of the study area, fronting the existing A55 to the south west.

4.2.4 The Knock Nature Walk is located adjacent to the existing A55 and Knock Road.
A number of housing plots of land on the southern side of the existing A55 are required to accommodate the widening of the road. Whilst a number of these plots are in private ownership, DRD Roads Service has obtained several plots of land previously occupied by residential properties.

4.2.5 As the widening will be to the south of the existing road, properties here will be most affected. This will involve demolition of three properties in total - 11 and 13 Shandon Park and 64 Knock Road and loss of curtilage to existing properties.

4.2.6 In relation to non-residential land use, land loss occurs along the frontage of the existing A55 at Towell House, Knock Nature Walk, the Marie Curie Centre and Shandon Park Golf Course; in all cases, impact is assessed as being not significant, with the exception of the Marie Curie Centre which is assessed as having a slight negative impact. Compensation measures will be required for permanent land loss.

4.2.7 There are no planning applications within the study area that will be significantly impacted by the scheme or conversely will impact upon the scheme.

4.2.8 The proposal shall inevitably impact upon utilities within the study area, due to the 'online' nature of the proposal and the presence of existing services.

4.2.9 Where the proposed works impact upon a utility, there is potential for disruption as services may be required to be diverted or halted in order to carry out construction works. Construction related impacts are temporary in nature; any disruption to supply will be counteracted by forward planning by the relevant service provider

4.2.10 Overall the proposal is assessed as having a minor impact upon utility services within the study area.

4.3 Mitigation Measures

4.3.1 The crossings of the major utilities will be constructed in accordance with the requirements of the relevant bodies to avoid/minimise disruption to local services.

4.3.2 Services will be protected or diverted as agreed with the service providers who will also indicate acceptable restrictions in services during the works.

4.3.3 The alignment has been designed to, where possible, minimise landtake; where loss of lands, buildings and or access occurs, detailed consultations shall take place with affected parties, to determine and agree level of accommodation works required.

4.3.4 Where only part of the curtilage of a property is to be acquired, agreement shall be reached with the landowner during the land purchase negotiations on the types of boundary wall/fences to be provided.

4.3.5 Replacement accesses shall be provided for any property whose existing access is affected by the scheme. As part of the proposal, provision is made for alternative access to the following properties / streets as outlined:

- Ascot Gardens and Ascot Park – via link road from Shandon Park (known as Ascot Link);
- No. 1 & 1A Kingsden Park – via link road from proposed widened A55 (known as Kingsden Link); and
- Nos. 60, 62 (proposed replacement dwelling) 64 & 68 Knock Road – via link road from widened A55 (known as Kingsden Link).

4.4 Conclusions

4.4.1 The proposal is located within a highly urbanised environment, dominated by residential land use. The online nature of the proposal restricts the overall impact of the scheme with land take being restricted to the southern side of the existing A55.

4.4.2 DRD Roads Service ownership of much of the required land, limits the severity of impact. In some cases the impacts are negative and mitigation measures in the form of boundary walls, fencing and vegetation planting may be utilised and subject to agreement through discussions with the affected landowner.

5.0 GEOLOGY AND SOILS

5.1 Methodology

A study of geology and soils in the area was carried out by reference to the following documents:

- Reference to the Geological Survey of Northern Ireland – Geology of Belfast and District (Special Engineering Geology Sheet, Solid and Drift);
- Reference to Geology Survey of Northern Ireland – Geological Map of Northern Ireland, Solid Edition. 1:250,000;
- Reference to Geology Survey of Northern Ireland – Geological Map of Northern Ireland, Quaternary Edition. 1:250,000;
- Consultation with Environment & Heritage Service, Contaminated Land Division; and,
- Model Procedures for the Management of Land Contamination – Contaminated Land Report 11. DEFRA & Environment Agency, 2004.

5.2 Findings

5.2.1 There is no bedrock exposed within the scheme and none of the site investigation boreholes reached bedrock. The Geotechnical Report for the scheme is included as part of the ES in Appendix 2.1. As with the existing A55, the proposed route will overlie similar drift geology. This drift geology includes sand and gravel deposits, together with a small portion of alluvial deposits and boulder clay.

5.2.2 As all of the land affected by the scheme is in an urban setting, there is no land suitable for arable agriculture, permanent pasture or rough grazing.

5.2.3 A review of NIEA land use Database has taken place to establish any historic contamination sites and only one potential site has been identified at the old railway line.

5.3 Mitigation Measures

5.3.1 Appropriate mitigation techniques will be required to avoid or minimise the potential impacts, which have been identified.

- It will be necessary to follow the process of managing land contamination outlined in the document 'Model Procedures for the Management of Land Contamination – Contaminated Land Report 11' published by DEFRA and the Environment Agency to assess the risk and possible remediation strategies to employ to these potential contamination sites.

- Specialist machinery will be utilised under appropriate weather and soil moisture conditions to prevent unnecessary soil compaction and soil loss.

- Topsoil and subsoil will be stripped and stored separately to facilitate the restoration of a natural soil profile upon reinstatement.

- If the soils are to be stored for any length of time, they should be grassed over to prevent erosion.

- Siltation traps will be installed to trap sediment and prevent damage to freshwater ecosystems.

- The area where construction vehicles are permitted to manoeuvre should be minimised to reduce the spatial extent of soils affected by the construction. Vehicles with wide tyres should be used to avoid compaction by spreading the weight of vehicles.

- Lubricants and fuels should be kept in a compound that has a hard stand. This should have a storm drain fitted to an interceptor capable of trapping the escaped hydrocarbons. Vehicles should also be kept overnight on the hard stand.

- Although spillages are rare, suitable emergency plans must be in place. During construction, great care must be taken to ensure that contamination in chemical (e.g. hydrocarbons) and physical (e.g. suspended solids) forms is minimised.

5.4 Conclusions

5.4.1 All underlying geology and soil affected by the proposed scheme is located in an urban setting. Appropriate mitigation measures will be employed to remediate any contamination issues if required.

6.0 ROAD DRAINAGE AND THE WATER ENVIRONMENT

6.1 Methodology

6.1.1 Potential impacts on the water environment have been assessed using the established methodology for routine runoff and spillage risk outlined in The Highways Agency's Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 10 (HA 216/06) - Road Drainage and the Water Environment. The following are topic areas used in the assessment procedures:

- Effects of Routine Runoff on Surface Waters;
- Effects of Routine Runoff on Groundwater;
- Pollution Impacts from Accidental Spillages;
- Assessing Flood Impacts.

6.1.2 The assessment was carried out with reference to and using the following sources:

- Rivers Agency Strategic Flood Map & Strategic Pluvial Map;
- Northern Ireland Environment Agency (NIEA) website www.ni-environment.gov.uk;
- Reference to OSNI Discovery Series Map, 1:50 000;
- Reference to Hydrogeological Map of Northern Ireland 1994;
- Reference to Groundwater Vulnerability Map of Northern Ireland 1994;
- Consultation with Northern Ireland Environment Agency (NIEA);
- Consultation with the Department of Culture, Arts & Leisure;
- North Eastern Draft River Basin Management Plan;
- The Environment (Northern Ireland) Order 2002;
- The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003;
- The Groundwater Regulations (Northern Ireland) 2009; and,
- The Environmental Liability (Prevention and Remediation) Regulations (Northern Ireland) 2009.

6.2 Findings

6.2.1 The proposed scheme has two surface watercourse crossings both of which are culverted. One is with the Knock River. The other surface water crossing point is with an un-named stream which passes through Shandon Park Golf Club. These watercourses are considered to be of low importance.

6.2.2 Information obtained from the Rivers Agency Strategic Flood Map & Strategic Pluvial Map indicates some localised carriageway flooding is predicted both in the present day scenario and in the climate change scenario at the stream which passes through the golf course.

6.2.3 The scheme falls within a localised section of Knock River floodplain. The flood risk attribute is valued as being of low importance.

6.2.4 The East Belfast Flood Alleviation scheme is ongoing in the area to improve an existing problem with flooding on the Knock River.

6.3 Mitigation Measures

6.3.1 Mitigation has been proposed as part of good construction practise to minimise risks of escape of sediment and soil into watercourses, regardless of their size as well as the prevention of oil or liquid cement spills from construction areas to waterways. All oils and fuels will be stored in secure bundled areas and refuelling will not be carried out near watercourses – The Knock River and the unnamed stream crossing from the Shandon Park Golf Course. If the site works involve the discharge of drainage water to the river, temporary oil interceptor facilities should be installed and maintained. Proposed drainage for the scheme should relate to:

- All surface water collected from the highway is to be treated by filters and oil interceptors before entering watercourses.
- There shall be no discharge of suspended solids or any other deleterious matter to watercourses.

6.3.2 The design, construction and maintenance of the proposed road drainage systems will follow the Pollution Prevention Guidelines (PPGs), produced by the Environment Agency (EA), Northern Ireland Environment Agency (NIEA) and Scottish Environmental Protection Agency (SEPA):

- PPG 1 General guide to the prevention of pollution.
- PPG 2 Above ground oil storage tanks.
- PPG 3 The use and design of oil separators in surface water drainage systems.

- PPG 5 Works and maintenance in or near water.
- PPG 6 Working at construction and demolition sites.
- PPG 21 Pollution incident response planning.
- PPG 22 Dealing with spillages on highways.

6.3.3 The drainage design and specification will comply with the DMRB and Manual of Contract Documents for Highway Works (MCHW) respectively. It will involve a kerb and gully drainage system due to its urban location.

6.3.4 The Rivers Agency has been consulted with regard to the outfall of surface water runoff from the proposed road. Permission was sought to discharge the storm water runoff to local watercourses. It materialised after preliminary discussions, Rivers Agency permission is largely dependent on the outcome and timing of the on-going East Belfast Flood Alleviation Scheme in the area. Rivers Agency have confirmed that if the Alleviation Scheme is undertaken prior the road widening construction, discharging directly to the Knock River will be acceptable. If this is not the case, temporary attenuation techniques may need to be utilised until the flood problem has been alleviated.

6.3.5 The use of SUDS will be considered and assessed in relation to land requirement/availability, safety, maintenance requirements and functionality.

6.4 Conclusions

6.4.1 The scheme crosses two surface watercourses of low importance, the Knock River and a stream which passes through Shandon Park Golf course. These watercourses can be subject to localised flood events. The mitigation measures and the management of the site in accordance with the requirements of the relevant authorities will ensure that no significant impact on surface waters will occur as a result of the construction and operation activities.

7.0 ECOLOGY AND NATURE CONSERVATION

7.1 Methodology

7.1.1 A desktop review was carried out to identify features of ecological importance within the study area and surrounding region. From a biodiversity perspective, the proposed site area and a surrounding buffer zone of 2 km was included to collate relevant environmental data and anecdotal information to assist with the ecological assessment and evaluation.

7.1.2 After the desktop ecological assessment was complete; the site was visited on various days to carry out an extended Phase 1 Habitat survey. This survey was carried out according to the industry standard JNCC Phase 1 Habitat Survey Methodology (JNCC, 2003). Habitats were recorded and mapped and an intensive search was undertaken for protected species.

7.1.3 In preparing the ecology and nature conservation sections of the Environmental Statement, all tasks were carried out with reference, as applicable to the Institute of Ecology and Environmental Management draft Guidance on Survey Methodology (IEEM 2005), draft Guidelines for Ecological Impact Assessment (IEEM 2002, as amended), Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 4: Environmental Assessment for Ecology and Nature Conservation.

7.2 Findings

7.2.1 The scheme will not significantly impact any local, national, or European designated sites of nature conservation importance.

7.2.2 The main water courses in the vicinity of the scheme are the Knock River and a stream to the southern end of the scheme which eventually discharges into the Knock River approximately 0.7km north-west of the scheme. There are no lakes located in the vicinity of this scheme.

7.2.3 There were no protected species or habitats recorded on site, during any of the surveys.

7.2.4 There is a single Northern Ireland Priority Habitat – Parkland - within the grounds of Towell House. The portion of land proposed to be taken is not deemed significant enough to pose a risk to the priority habitat.

7.2.5 No field signs of Otter or Badger were recorded within the scheme extents. No evidence of Badgers breeding or foraging were found within the scheme boundaries.

7.2.6 The numerous hedges within the scheme provide suitable foraging habitat to bat species within the locality. Dead bats of two species (common pipistrelle & Leisler's bat) were found in one of the empty properties due to be demolished as part of the scheme.

7.2.7 Only two butterfly species (Large White *Pieris brassicae* Small White) were recorded during the walkover surveys - both within the scrub by Knock River. Other common butterfly species will frequent the area.

7.2.8 There are two invasive plant species within the site boundary - Himalayan Balsam and Japanese Knotweed.

7.3 Mitigation Measures

7.3.1 General mitigation relating to both the operational and construction phases of the proposed scheme is listed below:

- There shall be no discharge of suspended solids or any other deleterious matter to watercourses.

- Best practice construction guidelines and an effective environmental operating plan (EOP) shall be drawn up and adhered to by the successful contractor. This EOP shall be submitted to the Client Representative and NIEA for approval prior to works.

- During construction, release of suspended solids to all surface waters will be controlled by interception (e.g. silt traps) and management of site run-off. Any surface water run-off must be treated to ensure that it is free from suspended solids, oil or any other polluting materials.

- During construction, silty water shall be treated using silt trays/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.

- All fuels, lubricants and hydraulic fluids will be kept in secure bundled areas away from watercourses. The bundled area will accommodate 110% of the total capacity of the containers within it. Containers will be properly secured to prevent unauthorised access and misuse.

- As part of the EOP, an effective spillage procedure will be put in place with all staff properly briefed. Any waste oils or hydraulic fluids will be collected, stored in appropriate containers and disposed of off site in an appropriate manner.

- Fuelling and lubrication will not be conducted within 15m of the nearest watercourse

- Storage areas, machinery depots and site offices will not be located within 15m of the nearest watercourse

- Foul drainage from the site offices and facilities will be properly treated and removed to a suitable treatment facility.

- Spill kits will be made available and all staff will be properly trained on correct use.

- Disposal of raw or uncured waste concrete will be controlled to ensure that watercourses or other sensitive areas will not be impacted.

- Petrol and oil interceptors will be used to prevent contaminants entering Belfast Lough and tidal ponds.

- All or any areas proposed, as disposal/storage/recovery sites will be subject to ecological assessment as part of any applications for planning permission, waste permits or waste licenses.

7.3.2 There are several environmentally damaging invasive plant species within the scheme footprint including two species (Japanese Knotweed and Himalayan Balsam) for which it is an offence to a ”plant or otherwise cause to grow in the wild”. An Invasive Species Management Plan must be drawn up and implemented by a suitably experienced ecologist prior to commencement of construction works.

7.3.3 Site clearance, namely the removal of the scrub and wooded areas will occur outside of the bird-breeding season (April-August). The site clearance will be restricted to what is absolutely necessary for the road scheme. Loss of woody vegetation will be minimised to help reduce the impact on faunal species from noise disturbance during both the construction and operational phases of the scheme.

7.3.4 The physical disturbance of fauna from on-site activity will be minimised by restricting site activities to clearly designated construction areas. The bat expert has not identified an any potential roosts in existing trees, however where mature trees are to be removed or modified, further inspection by a bat expert should be undertaken prior to felling/removal.

7.4 Conclusions

7.4.1 The proposed scheme footprint mostly contains amenity grasslands and mixed native/non-native/ornamental hedges of low conservation value. The proposed scheme does also contain a large number of native mature broad-leaved and coniferous trees which have wildlife value as bat, invertebrate, and bird breeding/feeding sites. Various mitigation measures have been suggested to help ameliorate any loss of wildlife value.

7.4.2 Several invasive plant species are found within the scheme footprint; in the scrub and woods by Knock River, and in hedges along the northern side of Knock Road. An Invasive Species Management Plan should be drawn up prior to commencement of construction to help control/eradicate the problem of invasive species spread.

7.4.3 A small area of species-rich scattered scrub, a short stretch of hedges with trees, and a large number of mature and semi-mature trees will be lost. Specific mitigation and compensatory measures involving the planting of native species-rich hedge and trees, and the possible erection of bat and bird boxes on existing mature trees have been proposed to provide an overall positive biodiversity gain.

8.0 CULTURAL HERITAGE

8.1 Methodology

8.1.1 The assessment has been undertaken in accordance with the guidance and recommendations for a Stage 3 assessment in the Design Manual for Roads and Bridges Volume 11, Section 3, Part 2 – Cultural Heritage (2007). The assessment has been based on identification and evaluation of the value of existing and potential baseline cultural heritage archaeological and architectural resources and prediction of the magnitude of impacts on the resources, taking proposed mitigation into account.

8.2 Findings

8.2.1 There are a total of twelve cultural heritage constraints located within the study area for the proposed A55 Knock Road widening scheme:

two conservation areas;

one area of townscape character;

three industrial heritage sites;

two archaeological sites;

two listed building, and;

two structures observed during field survey of architectural heritage interest.

No unrecorded archaeological features were observed, although there is limited potential for sub-surface archaeological remains along the scheme upgrade along the southern footprint edge.

8.2.2 The two conservation areas and area of townscape character shall not be impacted by the scheme; except for a slight retention of the existing boundary defining the area of townscape character to the east of the existing A55 road. Similarly, the archaeological sites DOW004:001 - Shandon Park (Shandon Mound) and DOW004:002 – Medieval Church Ruins and Graveyard (Off Knockmount Park) and listed building HB/26/13/008 - Knock Methodist Church shall not be affected by the scheme.

8.2.3 Contained within Table 8.1 below is an outline of the values applied to the remaining cultural heritage constraints located within the study area.

Table 8.1: Value of the Cultural Heritage Resource

ASSET	Value
Listed House: HB26/11/001 – 9A Ascot Gardens	Low
Knock Halt: IHR No. 02601:098:000	Negligible
Site of Mill: IHR No. 02601:098:000	Negligible
Knock Bridge: IHR No. 10575:000:000	Negligible
House: Belgrave Villa, 64 Knock Rd	Low
Pair Semi-Detached Houses: 11 & 13 Shandon Park	Low
Potential sub-surface archaeology	Unknown

8.2.4 The magnitude of impact identified for each cultural heritage element pertaining to the A55 Knock Road widening scheme as outlined in Table 8.2 has been assessed in terms of the degree of change that would be experienced by the asset and its setting if the scheme were to be completed but also taking into account applicable and appropriate mitigation measures for each.

Table 8.2: Magnitude of Impact on the Cultural Heritage Resource

ASSET	MAGNITUDE OF IMPACT
Listed House: HB26/11/001 – 9A Ascot Gardens	Negligible
Knock Halt: IHR No. 02601:098:000	Negligible
Site of Mill: IHR No. 02601:098:000	Negligible
Knock Bridge: IHR No. 10575:000:000	Negligible
House: Belgrave Villa, 64 Knock Rd	Major
Pair Semi-Detached Houses: 11 & 13 Shandon Park	Major
Potential sub-surface archaeology	Negligible

8.3 Mitigation Measures

8.3.1 It is recommended that a programme of archaeological monitoring be carried out along the footprint of the scheme during the initial phase of groundworks/topsoil stripping works. A licensed archaeologist, approved by NIEA, shall carry this out. This mitigatory measure shall be applied to help reduce the magnitude of impact on the industrial heritage sites (Knock Halt, site of a Mill and Knock Bridge) as well as areas that may potentially contain sub-surface, hitherto unknown archaeological features.

8.3.2 In relation to, Belgrave House (64 Knock Road) and the semi-detached houses at 11 & 13 Shandon Park, it is recommended that that a full written, drawn and photographic building record is made for archival purposes and for future public access files. In addition, should any original materials be salvageable prior to demolition (e.g. timber sash windows; slates, stained glazing etc.) the feasibility of reclaiming such articles should be explored.

8.4 Conclusions

8.4.1 All mitigation measures for the Cultural Heritage resource regarding the proposed A55 Knock Road improvement scheme will be subject to discussion with, and approval from, the relevant Planning Authorities and NIEA.

8.4.3 The significance of effect of the scheme on cultural heritage assets range from neutral; neutral/slight; to slight/moderate. In this regard it is deemed that although there are six measurable effects on elements of the resource, none are adversely negative and relevant mitigation measures applied for each shall appropriately address the level of impact on the particular archaeological or architectural feature.

9.0 AIR QUALITY

9.1 Methodology

9.1.1 The results of the assessments are compared with the air quality limit values stated in the UK Air Quality Strategy and the relevant EU Directives on ambient air quality. The principle of these limit values is the protection of public health from the potential adverse effects of air pollution. The limit values have been designed to protect the most sensitive part of the population providing a margin of protection for asthmatics and people with respiratory and heart problems. Therefore, the exposure of healthy individuals to these levels would not be associated with detrimental health effects.

9.1.2 The Limit Value Regulations set air quality standards for a range of air pollutants, including NO2 and PM10. The UK Government has published an Air Quality Strategy, which sets out how the Government proposes to fulfil the UK's obligations under the European Community (EC) Air Quality Directive.

9.1.3 The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland sets out the policy, targets and objectives for air pollutants up to 2010.

9.1.4 Where air quality objectives are likely to be exceeded then the relevant local authority must declare an Air Quality Management Area (AQMA). Under the guidance to local authorities, local authorities are required to carry out a staged assessment of local air quality.

9.1.5 The Technical Guidance to local authorities for the review and assessment of air quality was updated in February 2009. The Technical Guidance sets out the methods to be used to determine if the air quality objectives up to 2020 are likely to be achieved.

9.1.6 Policy Guidance Northern Ireland LAQM (PGNI(03)), issued under Part III of the Environment (Northern Ireland) Order 2002, Local Air Quality Management, is designed to assist relevant authorities, district councils and public bodies with their local air quality management duties. The guidance requires that local authorities integrate air quality considerations into the planning process at the earliest possible stage.

9.1.7 PGNI(03) sets out those circumstances where air quality may be a material issue for planning applications and provides guidance to planning authorities on making these decisions. It states that air quality is likely to be particularly important:

● where the development is proposed inside, or adjacent to, an Air Quality Management Area (AQMA);

● where the development could itself result in the designation of an AQMA;

● where the development, including associated traffic, is likely to result in deterioration of local air quality; or

● where to grant planning permission would conflict with, or render unworkable, elements of a local authority's air quality action plan.

9.1.8 The existing A55 Knock Road and the proposed widening of the A55 Knock Road are both located in an AQMA. The area of the proposed widening scheme is located in one of the four declared Air Quality Management Areas (AQMAs) declared by Belfast City Council in August 2004.

9.1.9 Updating and Screening Assessments have been carried out by Belfast City Council as part of the Review and Assessment process required by the above-mentioned legislation.

9.2 Findings

9.2.1 During the construction phase of the proposed road scheme the major influence on air quality is likely to be dust-generating activities such as movement of plant vehicles both on and around the construction area. Nuisance caused by the deposition of construction dust is likely to be the most significant issue in relation to local air quality impacts at construction stage. Dust may be particularly prevalent during dry, windy conditions if top soils are exposed.

9.2.2 A detailed dispersion model has been used to predict air pollution in accordance with the requirements of Belfast City Council to predict operational stage air quality. In accordance with best practice this assessment only considers impacts on the annual mean Nitrogen Dioxide and particles as both PM_{10} and $PM_{2.5}$ as these are the only pollutants with the potential to be significant in terms of human health as a consequence of the proposed scheme. A total of five scenarios were assessed, these were:

- 2008 existing (to allow comparison to measured data);
- 2013 without the proposed widening in operation;
- 2013 with the proposed widening in operation;
- 2028 without the proposed widening in operation; and,
- 2028 with the proposed widening in operation.

9.2.4 Eight locations were selected as representative sensitive receptors for extracting and comparing information produced from the detailed dispersion computer model.

9.2.5 The model predicts with the scheme in place in 2013 a decrease in concentrations in six of the eight representative sensitive receptor. The annual mean objectives for $PM_{10,}$ $PM_{2.5}$ and NO_2 are unlikely to be exceeded in 2013 or thereafter as a consequence of the proposed scheme. All receptors for both PM_{10} and NO_2 are under existing threshold values for 2013 with the scheme in place and for both 2028 scenarios.

9.2.6 The regional impacts of additional traffic in relation to Carbon Dioxide levels and climate change are negligible.

9.3 Mitigation Measures

9.3.1 A Dust Minimisation Plan should be implemented on site. Prior to commencement of works on site it is recommended that the contractor undertake a site-specific air quality risk assessment.

9.3.2 In general, junctions and intersections should be sited to minimise the impact on air quality at sensitive locations. Slow traffic negotiating intersections generally produces greater amounts of pollution than freely flowing traffic. The nature of the road widening means junction location and structure are already existing. The proposed widening will seek to improve junction layout and associated traffic movement.

9.3.3 The use of vegetation screens or barriers can, when specific conditions prevail, assists in mitigating air pollution impacts on sensitive receptors. The use of bunds or screens can divert pollution away from receptors or increase the distance to receptors, thus allowing greater dispersion.

9.4 Conclusions

10.4.1 Based on this assessment, air quality within the study area meets relevant UK and European Air Quality Standards for 2013 and 2028 with the scheme in place.

9.4.2 Improved engine efficiency and the road centreline moving from the heavily occupied northern side add to the predicted air quality concentrations improvements.

9.4.3 Site management will inform Belfast City Council of the implementation of the dust minimisation plan prior to commencing work on-site.

10.0 NOISE AND VIBRATION

10.1 Methodology

10.1.1 A Noise and Vibration Assessment was completed to determine the likely noise and vibration impact associated with the proposed road. The assessment focused on determining the likely noise and vibration impact associated with the operation of the new road compared to the existing road network and on the noise and vibration impact associated with the construction phase of the proposed development.

10.1.2 Several pieces of legislation are referred to in the Noise and Vibration Assessment, including the Land Acquisition and Compensation (Northern Ireland) Order 1973, the Noise Insulation Regulations (Northern Ireland) 1995 and the Pollution Control and Local Government (Northern Ireland) Order 1978. The Noise Insulation Regulations (NI) 1995 specifies the conditions under which there is a duty for the relevant department to insulate buildings or to make grants in consequence of the use of the road. These conditions are:

- The combined expected maximum traffic noise level must not be less than the specified noise level (i.e. 68 dB[A] $L_{10\ 18\text{-hour}}$);
- The relevant noise level is at least 1.0 dB(A) more than the prevailing noise level;
- The contribution to the increase in the relevant noise level from the new and altered highway must be at least 1.0 dB(A).

10.1.3 The Highways Agency Design Manual for Roads and Bridges (DMRB) is the approved guidance document for assessing noise and vibration from new road developments in the UK. The methodology outlined in the DMRB was used to complete a detailed assessment of the proposed road widening scheme. Detailed noise models were created to determine noise predictions at the nearest properties to the proposed development during the base year (2008), the proposed year of opening (2013) with and without the scheme in place and the design year (i.e. opening year + 15 years) with and without the proposed scheme in place. The noise prediction methodology used was from the approved guidance document the Calculation of Road Traffic Noise [CRTN] (Department of Transport, Welsh Office) 1988.

10.1.4 British Standard BS5228:2009 Noise and Vibration Control on Construction and Open Sites was used to assess the construction phase noise and vibration impacts associated with the proposed development.

10.1.5 A noise monitoring survey was completed in accordance with the 'Shortened Measurement Procedure' specified in the CRTN for the purposes of calibrating the noise models described above. Noise monitoring was carried out on-site using a Bruël & Kjær 2250 Hand Held Analyzer and a Bruël & Kjær Type 4231 Sound Level Calibrator. This instrumentation conforms to the requirements for integrating averaging sound level meters (Type 1) as specified in BS EN 60804. The sound level meter was accurately calibrated before use. The weather conditions were in accordance with the requirements of BS7445-1:2003 Description and Measurement of Environmental Noise.

10.1.6 Detailed traffic flow predictions were obtained from the traffic engineers and used as a basis for making traffic noise level predictions for each of the five detailed noise models, namely Base Year (2008), Opening Year (2013) Without Scheme, Opening Year (2013) With Scheme, Design Year (2028) Without Scheme and Design Year (2028) Without Scheme.

10.1.7 A range of vibration standards were discussed in the Noise and Vibration Assessment and threshold limit values for damage to property and disturbance to people were set out in detail.

10.2 Findings

10.2.1 The assessment of construction phase noise and vibration indicated that there was potential for severe construction phase noise impacts at the nearest properties to the proposed works if worst-case construction activities are undertaken at the boundary of the proposed development site closest to the nearest properties. Mitigation measures will be required to ensure that adequate protection from construction phase noise is achieved at the nearest properties. These measures are outlined in Section 11.3 of ES.

10.2.2 As described in Section 11.1 of ES, five detailed noise models were created to determine the noise level predictions at a range of the nearest noise sensitive properties to the proposed development. In all, 135 properties were included in the noise model. Not all properties within 300m of the proposed road have been included in the noise model on account of the large number of properties within 300m of the proposed road. Where a property has not been included, adjacent properties have been included and the detailed noise predictions for the adjacent properties have been used as a basis to predict noise impacts and mitigation requirements associated with the relevant property.

10.2.3 Of the 135 properties included in the noise model, 106 properties will experience a decrease in noise levels as a result of the proposed scheme, compared to the remaining 29, which will experience either no change or a minor to moderate increase in noise levels. Overall, the majority of properties in the vicinity of the scheme will experience a minor decrease in noise levels as a result of the scheme.

10.2.3 15 properties included in the noise model satisfied the three conditions outlined in the Noise Insulation Regulations (NI) 1995 for compensation (see 11.1.2 of ES) without mitigation measures in place. The other modelled receptors did not satisfy all of three conditions as set out in the above-mentioned regulations. Section 11.3 of ES outlines the mitigation measures included in the Noise and Vibration Assessment to ensure that no properties in the vicinity of the proposed development will satisfy the conditions for compensation as set out in the Noise Insulation Regulations (NI) 1995.

10.2.4 A qualitative assessment was completed to determine the likely noise impact associated with properties greater than 600m from the proposed road scheme. This assessment concluded there will be no significant impact on properties greater than 600m from the proposed road.

10.2.5 There is no blasting or piling required as part of the construction phase of the proposed development and therefore, the potential for significant vibration impacts is low. There is no significant potential for vibration impacts during the operational phase of the proposed road.

10.3 Mitigation Measures

10.3.1 There is potential for significant construction phase noise impacts from the proposed development if mitigation measures are not put in place. The Noise and Vibration Assessment details a range of mitigation measures aimed at reducing the significance of any construction phase noise impacts. A temporary noise barrier (approximately 2m height) should be placed between the construction activities for all properties in close proximity to the construction site (at least all properties within 100m of the proposed site). If properly installed, such a barrier can achieve between 10-15dB(A) attenuation. In addition to this, there will be a requirement to create and agree with the local council a detailed Construction Phase Noise Plan which will outline all the measures used to ensure that construction phase noise levels are reduced as much as practicable. This plan will address issues such as working hours, working arrangements in close proximity

to properties, general good practice for reducing noise levels, collaboration with property owners, complaints procedures and more.

10.3.2 As outlined in the finding section above, 15 properties included in the noise model satisfied the conditions for compensation included in the Noise Insulation Regulations (NI) 1995. As part of the detailed noise modelling included in the Noise and Vibration Assessment, a mitigation strategy was devised to ensure that the noise impacts from the proposed development were reduced to within acceptable limits. The mitigation measures included in the assessment specify that a low noise road surfacing (LNRS) will be used through the entire length of the proposed scheme and this surface will achieve a 3dB(A) reduction when compared with a standard hot rolled asphalt surface (which was used for the noise predictions in the noise models). In addition to this, a 3m high noise barrier will be required extending 100m (chainage 750 to 850) to ensure adequate attenuation is achieved at the Marie Curie building.

10.3.3 A range of standard good practice measures have been included in the Noise and Vibration Assessment to ensure that any potential for vibration impacts during the construction phase are reduced.

10.4 Conclusions

10.4.1 A detailed noise and vibration assessment was completed in relation to the proposed road scheme. As part of the noise assessment, 135 properties were modelled within a 300m of the proposed development. Not all properties within 300m were included in the model but the properties chosen were selected so as to be representative of all of the properties within 300m of the proposed road. The majority of properties within 300m of the proposed road will experience a minor decrease in noise levels as a result of the proposed road, although a relatively small number will experience minor increases in noise levels.

10.4.2 Where the assessment demonstrated a minor increase in the operational phase noise as a result of the proposed road, low noise road surfacing and noise barriers have been stipulated to ensure that the noise levels at these properties remain within the approved noise threshold levels stipulated in the relevant legislation and noise guidance documentation.

11.0 PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS

11.1 Methodology

11.1.1 This section has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 8.

11.2 Findings

11.2.1 Within the scheme, footways run along both sides of the existing A55 Knock Road, Kings Road, and throughout most of the residential areas located within the study area. The Connswater Community Greenway is proposed to run through Laburnum Playing Fields and cross the Knock Road to the Braniel Primary School.

11.2.2 The community severance is described as severe, however the overall change from the baseline is described as negligible given the traffic levels experienced on the A55 Knock Road.

11.2.3 The scheme in the proposed year of opening will have increased traffic levels from existing levels along the A55 Knock Road. For pedestrians and cyclists who will have to cross four lanes of traffic, this severance is described as severe, however the overall change from the baseline is described as negligible given the traffic levels experienced on the A55 Knock Road.

11.2.4 The provision of the refuge island as part of the scheme, separating the right turn traffic from the main carriageway at the A55 Knock Road/Sandown Road/Shandon Park junction will have a negative impact on nearby residential properties. The kerbed central island will not permit the residents to make a right turn into or out of a total of 17 properties. This will result in an increase in severance and an increase in journey length for these residents.

11.2.5 The scheme results in two junctions being stopped up. These are Ascot Park and Kingsden Park. The stopping up of Ascot Park was requested by the residents to aid safety when joining the A55 Knock Road.

11.2.6 Right turn vehicle movements from Knockwood Park onto the A55 will be prevented. As a result the most affected residents located off Knockwood Park will be required

to make an additional journey length. A number of meetings with residents groups in Clarawood took place and there was no objection to the banning of this movement.

11.3 Mitigation Measures

11.3.1 The proposed road should be designed with pedestrian and cyclist safety in mind. The number and duration of temporary footpath closures should be limited.

11.3.2 Dedicated crossing points, pedestrian refuges and dropped kerbs have been incorporated into the preferred option design and will be provided to ensure safe crossing facilities for pedestrians. This will enhance pedestrian safety by reducing pedestrian/vehicle conflict.

11.4 Conclusions

11.4.1 The level of severance for pedestrians and cyclists is deemed negligible in comparison to the existing baseline situation on the A55.

11.4.2 A total of 17 residential properties will be prevented from making a right turn as a result of a central refuge island. This central refuge is required for safety reasons. This will result in an increase in severance and an increase in journey length.

11.4.3 A right turn manoeuvre will also be prevented at Knockwood Park.

11.4.4 The stopping up of Ascot Park was requested by the residents to aid safety when joining the A55 Knock Road.

11.4.5 The proposed road design includes dedicated pedestrian crossing points which will reduce the effects of severance on pedestrians and cyclists.

12.0 VEHICLE TRAVELLERS

12.1 Methodology

12.1.1 The assessment of this section has been carried out based on guidelines in the Highways Agency's (HA) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 9 (DMRB 11.3.9) Vehicle Travellers. This assessment has also been supplemented with Transport Analysis Guidance (TAG) (ref. DRD A55/36), Unit 3.3.13 The Journey Ambience Sub-Objective.

12.2 Findings

12.2.1 The scheme is predicted to reduce traveller stress by reducing frustration of road users. Widening to two lanes of the current single carriageway will enable travellers to make better progress and thus reduce journey times and frustration. The alleviation of the narrowing of lanes opposite the Cherryvalley junction will increase traffic safety and also improve journey times and lessen driver stress. In addition, effective signage together with free flowing traffic on the widened road and improved junctions should help minimise driver stress.

12.3 Mitigation Measures

12.3.1 Mitigation measures can aid in reducing adverse impacts, some of which can affect journey ambience. Such measures include:

- Grading and shaping of cuttings and embankments;
- New planting and areas of habitat creation;
- Position of lighting and large gantry signs;
- Fencing, such as on the highway boundary and for screening (e.g. to reduce noise from the road).

12.4 Conclusions

12.4.1 Traveller views from the existing A55 during the construction phase would vary, depending on the presence of localised vegetation and topography, which would be present to screen the construction.

12.4.2 The construction of the scheme has the potential to increase the levels of stress felt by road users. Traffic management procedures would be implemented during construction to reduce stress as far as possible.

12.4.3 Stress levels are predicted to be high without the scheme in place and the proposed widening scheme will improve the flow of traffic and reduce journey times and this will have a beneficial effect on driver stress when the proposed widening is finished.

13.0 DISRUPTION DUE TO CONSTRUCTION

13.1 Methodology

13.1.1 In accordance with Design Manual for Roads & Bridges Volume11 (Stages in the Assessment of Disruption due to Construction).

13.1.2 An assessment of disruption due to construction covers the effects on people and the natural environment, which occur between the pre-construction works and the end of the contract maintenance period. It is important that nuisances and disturbance to the local community and vehicle travellers are kept to a minimum, through good design, planning, programming and good working practices.

13.2 Findings

13.2.1 The proposed scheme will have a range of impacts during the construction phase. Some of these impacts are discussed under the various environmental issues:-

- Air Quality
- Cultural Heritage
- Ecology and Nature Conservation
- Landscape Effects
- Land Use
- Noise and Vibration
- Pedestrian, Cyclists, Equestrians and Community Effects
- Vehicle Traveller
- Road Drainage & the Water Environment
- Geology and Soils

13.2.2 Impacts are predicted to occur during the construction of the proposed works. A major source of potential disruption due to construction will be traffic movements generated by the proposed scheme. These movements will arise from the transfer of personnel, plant and equipment to and from the site; the undertaking of construction activities particularly the earthworks required for this scheme; and the importation and disposal of construction and waste materials respectively. There will be traffic disruption on the A55 and on the adjacent local road network, resulting from temporary traffic management arrangements at different stages throughout the

construction works. There will also be disruption to the movements of pedestrians, cyclists and the local communities in the vicinity of the scheme during the construction phase.

13.3 Mitigation Measures

13.3.1 The contract to undertake the proposed works will include contractual working restraints to minimise the adverse effects of construction on the local area. Specifically regarding general site issues, the contractor appointed to undertake the proposed works, as part of the contractual working restraints, will be required to develop and implement an approved Traffic Management Plan (TMP) for the duration of the works that will complement the proposed methodology for construction and associated programme for the works. The TMP will have to be approved by the appropriate authorities including DRD Roads Service and the PSNI. The TMP will need to reflect the status of the A55 as a Key Transport Corridor and, as such, reasonable measures will be required to be included to minimise the impact on traffic that wishes to utilise the existing route during the construction period.

13.3.2 Similarly, the Contractor will be obliged to consider the impact on access to adjacent properties during the course of works as part of a traffic management plan within the site. Likewise vibration effects from construction activities should be assessed in advance of undertaking works and appropriate construction methods adopted.

13.3.3 Condition surveys will be required on properties close to proposed retaining structures. Depending on the proposed method of construction, vibration effects may have to be considered and addressed in the methodology proposed by the contractor. Similarly, if bedrock is to be removed vibration effects on surrounding property must be considered.

13.3.4 Where access to a property is to be affected by the permanent works, adequate, temporary access will have to be afforded to third parties until such times as the proposed, permanent access arrangements are in place. The contractor will be obliged to liaise with the utility authorities to programme the permanent works around any proposed service works to avoid disruption to supplies.

13.4 Conclusions

14.4.1 Impacts will occur during the construction of the proposed works. There will be traffic disruption on the A55 and on the adjacent local road network, resulting from temporary traffic management arrangements at different stages throughout the construction works. There will also be disruption to the movements of pedestrians, cyclists and the local communities in the vicinity of the proposed scheme. However, these impacts will be temporary in nature and can be minimised through the development and implementation of an effective TMP, which will be an obligation on the contractor responsible for the works and subject to the approval of authorities including DRD Roads Service and the PSNI.

14.0 IMPACT ON POLICIES AND PLANS

14.1 Methodology

14.1.1 An assessment of the policies and designations relevant to the study area was carried out in accordance with the Design Manual for Roads and Bridges, (DMRB) Volume 11, Section 3, Part 12 (Impact of Road Schemes on Policies and Plans). A review of the area was undertaken using the following key documents:

- The Regional Development Strategy for Northern Ireland 2025: Shaping Our Future (RDS) (ref. DRD A55/4);
- Planning Policy Statement (PPS) 1 – General Principles;
- Planning Policy Statement 2 - Planning and Nature Conservation;
- Planning Policy Statement 3 - Access, Movement and Parking;
- Planning Policy Statement 6 - Planning, Archaeology and the Built Heritage;
- Planning Policy Statement 13 - Transportation and Land Use;
- Planning Policy Statement 15 - Planning and Flood Risk;
- Belfast Urban Area Plan 2001 (BUAP) (ref. DRD A55/6);
- Draft Belfast Metropolitan Area Plan 2015(BMAP) (ref. DRD A55/7);
- The Regional Transportation Strategy for Northern Ireland 2002 –2012 (RTS) (ref. DRD A55/5);
- The Belfast Metropolitan Transport Plan 2015(BMTP) (ref. DRD A55/2);
- Planning Applications within the study area.

14.2 Findings

14.2.1 The scheme will contribute to the vision of the Regional Transportation Strategy. It will help the A55 meet standards identified for the Strategic Highway Network, as identified in the draft Belfast Metropolitan Transport Plan. Policy and proposals contained within the draft Belfast Metropolitan Area Plan (BMAP) allow for this proposed Strategic Road scheme.

14.2.2 On the basis of our structured analysis of the planning policy context the following conclusions can be made:

- Regional Development Strategy – The proposal is consistent with the policies contained in the RDS relating to: general road infrastructure improvements; Belfast Metropolitan Area; and the Metropolitan Transport Corridor Network.

- Area Plan – Policy and proposals contained within draft BMAP allow for this proposed road scheme. The proposals are in line with Highway Measures contained within BUAP.

- Planning Policy Statements - The potential impacts of the proposed project on nature conservation, cultural heritage, landscape, water, soils & geology, air, noise and traffic have been rigorously assessed in the Environmental Statement. Where appropriate, mitigation measures are proposed and it is concluded that the implementation of those appropriate mitigation measures will render any residual impact to be of little significance. The proposal conforms to the policy objectives of the relevant Planning Policy Statements.

- Transportation Policy – The proposed road upgrade will contribute to the vision of the Regional Transportation Strategy. It will help the A55 meet standards identified for the Strategic Highway Network, as identified in the Belfast Metropolitan Transport Plan.

14.3 Mitigation Measures

14.3.1 No mitigation measures are necessary.

15.0 LANDSCAPE

15.1 Methodology

15.1.1 The landscape and visual assessment methods are derived from the *Design Manual for Roads and Bridges* Volume 11, Section 3 Part 5 for Stage Three Assessment (DMRB) and the *Guidelines for Landscape and Visual Impact Assessment* (The Landscape Institute and Institute of Environmental Management & Assessment, 2002). The landscape has been appraised to allow it to be described and classified into landscape character areas that in turn enable the categorisation of landscape quality. The capacity of a landscape to accept change of the type proposed is assessed.

15.1.2 Existing visual resources have been established along with sensitive receptors, i.e. residential properties, scenic viewpoints and visitor amenity areas. The proposed schemes are then applied to this landscape and visual baseline and potential impacts predicted.

15.2 Existing Landscape and Visual Context

15.2.1 For the purpose of the landscape assessment the study area is contained within the potential visual envelope for any of the proposed routes.

15.2.2 The study area lies in an undulating urban landscape on the eastern edge of Belfast City. The landscape is much modified by human activity. The topography is elevated above the City Centre and gradually rises to the east and northeast to form the Castlereagh Hills and Craigantlet Hills. Shandon Park Golf Course is located on the southern edge of the study area and provides a change in character from the dominant built form creating a more open parkland character. Further to this, the old Comber railway line crosses the study area in an east to west direction, this is now used as a walking route and cycle path.

15.2.3 The distinctiveness of the landscape in the study area can be sub-divided into two landscape character areas as follows:

- Parkland landscape, and;
- Urban landscape.

Landscape Character - Parkland Landscape

15.2.4 The Shandon Park Golf Course is one of Belfast's leading courses and is designed in a parkland setting of rolling hills within a wooded framework. Built development surrounds the golf course and is clearly visible from within. However, the open character of this landscape allows panoramic views north and west to Belfast City Centre and the Belfast Hills beyond. The wooded areas within this landscape are predominantly oak, ash and beech with occasional coniferous planting consisting of pines, spruce and larch. This landscape character area is fenced off for security purposes and the areas boundary consists of a chain link fence. This landscape character also covers the parkland that follows the old Comber railway line. This designed landscape consists of footpaths and recent planting of native species. The Knock River valley consists of mature trees set in the back gardens of houses in the Cherryvalley area. The Parkland Landscape character has a medium sensitivity to change.

Landscape Character - Upland Landscape

15.2.5 The study area is dominated by built form predominantly consisting of housing. Housing densities vary from low to high density. Large single dwellings are located in the Kings Road, Sandown Road and Cherryvalley areas. The large single dwellings are located within large gardens with mature trees and vegetation. The importance of the townscape character of these areas has been recognised in the Belfast Metropolitan Area Plan as outlined below. A number of large Northern Ireland Housing Executive estates are located within the area including Clarawood and Braniel Estates. Commercial development is largely restricted to the A55 corridor in the form of petrol stations, garages and offices. Two large nursing homes are also located within the immediate vicinity of the existing A55. The built form is predominantly two storeys in height that significantly restricts views both within this landscape and out to the surroundings. The Urban Landscape is enclosed in character. The Urban Landscape character has a low sensitivity to change.

Landscape Designations in draft Belfast Metropolitan Area Plan (BMAP)

Policy BT 022 Kings Road Conservation Area

15.2.6 Designated in August 2000, Knock Road bound Kings Road Conservation Area to the east and for most of its northern boundary by Green Road. Sandown Road and the disused railway track (Nature Walk) from the western and southern boundaries respectively. The area is centred on a section of the Kings Road, which has a

mature suburban landscape with large trees and mature gardens. The proposed scheme will have no direct or indirect impact on this designation.

Policy BT 023 Knockdene Conservation Area

15.2.7 Designated in August 2000, the western and southern boundaries of Knockdene Conservation Area are formed by Knock Road and Kings Road respectively. The eastern and northern boundaries of the conservation area are demarcated by the rear boundaries of the properties, which front onto Cabin Hill Park and Upper Newtownards Road. Knockdene is an Edwardian/late Victorian residential suburb containing predominantly detached dwellings in large plots with mature gardens. The area comprises Knockdene Park, Knockdene Park North and Knockdene Park South, which are tree-lined avenues with grass verges. The proposed scheme will have no direct or indirect impact on this designation.

Policy BT 035 Area of Townscape Character, Cherryvalley

15.2.8 Cherryvalley is an area of high landscape amenity based on the Knock River Valley. From this is derived the sinuous form of the Cherryvalley itself. A further valuable contribution to the local townscape is provided by the modest terraces of two storey houses situated on the Gilnahirk Road, most notably with its junction with Kings Road. The proposed scheme will have a slight negative impact on this designation.

15.2.9 The river valley forms an important visual boundary and a natural landscape corridor between the Knock Road and Gilnahirk Road.

Open Space

15.2.10 A Local Landscape Policy Area is designated at Shandon / Gilnahirk (Designation BT 148). This includes an area of local amenity importance – Shandon Park Golf Course and contiguous elements of designed open space with major views north over Belfast. The proposed scheme directly impacts on a very small portion of this designation with a slight negative impact as there is limited impact on the reasons listed for designation.

Historic Parks and Gardens

15.2.11 There are no registered historic parks and gardens located near the proposed site.

Landscape Condition and Sensitivity to Change

15.2.12 There are no Areas of Scenic Quality or Distinctive Landscape Settings located at the proposed site.

Existing Trees

15.2.13 There is a large number of existing mature trees within gardens adjacent to the existing A55 road. A tree survey was completed and included in Appendix 8.2 of the ES.

15.3 Predicted Impacts

15.3.1 An assessment of the significance of the impact of the proposed route on the landscape character has been completed and summarised below.

Urban landscape

15.3.2 Urban landscape is the most extensive landscape in the vicinity of the proposed road widening. The proposed road scheme will be directed through this landscape along an existing road and will involve some additional land take of land holdings only to the southern side of the existing A55 Knock Road.

15.3.3 The landscape quality of this urban landscape has been defined as 'ordinary'.

15.3.4 The landscape character of the urban landscape has been identified as having a low sensitivity. The predicted magnitude of change in the urban landscape resource is low. The predicted significance of landscape impact for the urban landscape is Slight.

Parkland landscape

15.3.6 The proposal road widening borders the western fringe of the Shandon Park Golf Course, and will involve some land take from this same side.

15.3.7 The landscape quality of this parkland landscape has been identified as 'good'.

15.3.8 The parkland landscape character has been identified as having a medium sensitivity. The predicted magnitude of change in parkland landscape resource is high. The predicted significance of landscape impact for the parkland landscape is Moderate/substantial but limited to a small portion of this landscape character area.

Visual Impact Assessment

15.3.10 Sensitive visual receptors have been calculated in close proximity to the widening scheme. Figures 8.4a – 8.4d of the ES show receptor location, receptor reference number and degree of visual impact pre-mitigation impact and residual impact (post establishment).

15.3.11 All visually sensitive receptors within 100m of the footprint have been subject to individual assessment as beyond 100m no significant visual impact will occur.

15.3.12 Tables 15.2 and 15.3 indicated the number of properties designated in each category. The total sensitive receptor count is 813.

Table 15.2: Degree of Visual Impact before mitigation

Degree of Visual Impact	Number of Properties
Substantial negative impact	19
Moderate negative impact	60
Slight negative impact	72
No change	662
Slight positive impact	0
Moderate positive impact	0
Substantial positive impact	0

Table 15.3: Degree of Visual Impact after mitigation

Degree of Visual Impact	Number of Properties
Substantial negative impact	3
Moderate negative impact	16
Slight negative impact	89
No change	705
Slight positive impact	0
Moderate positive impact	0
Substantial positive impact	0

15.4 Mitigation Measures

Landscape Mitigation Aims and Objectives

15.4.1 Mitigation measures are those taken to help reduce the impacts arising from any visually Intrusive or insensitive elements within existing landscape setting.

Landscape Aims

15.4.2 The physical and visual integration of the proposed scheme and associated features into surrounding landscape.

15.4.3 Screening to minimise visual intrusion and to reduce any significant negative aspects regarding the visual impact of the road and traffic on sensitive receptors.

General Objectives

15.4.4 Retention of as much existing hedgerows and trees as possible. Alongside the new road it is proposed to plant similar shrub based planting to provide visual enclosure in keeping with the surroundings, to screen the new road and passing traffic. There will also be opportunities for clusters of tree planting along the road verges to help provide screening from any affected properties. Mitigation should be in keeping with the existing landscape.

Woodland/Woodland Fringe

15.4.5 The woodland mix will be composed of locally occurring species and where required be composed to match existing planting. Climax species will include: *Fagus sylvatica* (Beech), *Quercus robur* (Oak), *Fraxinus excelsoir* (Ash), *Acer campestre* (Field Maple), *Pinus sylvestris* (Scots Pine). Nurse or pioneer species will include: *Betula pubescens* (Birch), *Alnus glutinosa* (Alder), and *Corylus avellana* (Hazel).

15.4.6 Woodland and fringe type planting along the scheme shall consist of woodland mixes developed to reflect the local character. Fringe planting will be included to provide a variety of woodland understorey and edge character. Species will be planted as whips and feathered transplants, at close densities, with groups of standards planted at strategic locations for immediate impact. The pioneer species and fringe planting will establish a low canopy within five to ten years, with the climax species developing a tall, fuller canopy over a ten to twenty-year period. The woodland will need to be managed and monitored as it develops.

Individual Tree Planting

15.4.7 Individual tree planting shall include standard (2.5–3.0 m) and heavy standard (3.5–4.25 m) trees located in hedges, parkland, general grass areas and other locations to provide specific screening and early effect. Planting at junctions shall provide a specific landscape indicator and immediate effect.

Shrub Planting

15.4.8 Shrub planting shall consist of suitable species to provide woodland understorey, woodland edge and scrub areas. Shrub planting mixes shall compliment areas of woodland.

Grass

15.4.9 The road verges will be seeded with a general (Grade II) grass seed mix. Areas away from designated sight lines where mowing regimes are not required to be of a regular nature will be seeded with wild grasses and meadow flowers. Grass mixes shall be employed to provide quality areas of low maintenance, rapid establishment, and visual appearance.

Management and Maintenance

15.4.10 Maintenance of the landscape works will be an integral part of the on-going site management. This will include a defects liability period during which any defective plant material is to be replaced. Litter picking and weed control shall be carefully monitored during the early growing seasons of the landscape maintenance contract. Contractors will comply with all health and safety standards, in particular with regard to maintenance works during the operational phase of the road.

15.5 Conclusion

15.5.1 After 10-15 years of growth the trees and shrubs will be established where the mitigation measures have been located. The shrubs and indigenous tree planting will resemble the local areas of existing vegetation. As the planting matures the road will, in general, become an integral component of the landscape, with a slight reduction in negative impact on the existing character.