



N4-N15 Sligo Urban Improvement Scheme

Sligo County Council

Environmental Assessment Report Volume 1 of 4: Non-Technical Summary

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1. Non-Technical Summary

1.1 Introduction & Need for the Proposed Road Development

Sligo County Council (SCC) has developed proposals for the improvement of a section of the N4 and N15 national road corridor on the northwestern extents of Sligo City. The design of the N4-N15 Sligo Urban Improvement Scheme (Sligo UIS), hereafter referred to as “the proposed development”, has been developed in the preparation of the environmental assessment of the proposed development and to establish land take requirements. The study area includes the interface of the N4, N15 and N16 national primary routes; the proposed development is therefore located on a strategic transport link connecting Sligo with Donegal to the north, Leitrim and Northern Ireland to the east and Dublin and the remainder of the national road network to the south. The N4-N15 Sligo Urban Improvement Scheme (‘the proposed development’) Environmental Assessment Report (EAR) presents a statement of the likely effects on the environment of the proposed development and includes a description of the measures envisaged in order to avoid, reduce and where possible, remedy any identified significant adverse effects.

The EAR documents have been subdivided into the following four volumes for ease of use:

- Volume 1: Non-Technical Summary;
- Volume 2: Main Text;
- Volume 3: Figures; and
- Volume 4: Appendices.

(a) Need for the Proposed Development

The road improvement aspirations along the N4-N15 route corridor follow on from the implementation of the N4 Sligo Inner Relief Road in 2005, a 4.5km dual carriageway that extends from the Carraroe roundabout south of Sligo to Hughes Bridge. The primary objective of the N4 Inner Relief Road was to remove traffic from the most congested streets in the town centre; after implementation, the scheme was found to have provided considerable benefits to Sligo in terms of traffic volume reductions on congested city centre streets and improved access to Sligo and its environs.

The section of road proposed development has been part of two previous road development projects which were progressed in recent years to improve the N4-N15 route corridor. In 2006, a preferred route was selected and approved by SCC for the “N4-N15 Sligo to County Boundary” realignment scheme. This project included the widening of Hughes Bridge and the construction of 26km of dual carriageway running from Hughes Bridge to the Leitrim county boundary to the north. The preliminary design, EIS and Compulsory Purchase Order (CPO) for that scheme were prepared however approval to publish and advance the scheme further was not granted by the funding agency, the National Roads Authority (NRA), which has since become Transport Infrastructure Ireland (TII), due to funding constraints in place at that time. This project ran from 2006 to 2011 and, while the road development remains an objective of SCC, there are no plans to undertake any further work on this scheme at this time.

In 2011, SCC proposed the “N4-N15 Sligo to Borough Boundary” scheme, a truncated version of the N4-N15 Sligo to County Boundary realignment scheme. This reduced scheme would also commence at, and include, Hughes Bridge but would terminate at the Sligo Borough administrative boundary. This scheme was some 1.6km in length. The preliminary design, EIS and CPO was finalised in 2011 however the EIS and CPO were not published, the project has not been progressed any further and, while the road development remains an objective of SCC, there are no plans to undertake any further work on this scheme at this time.

In 2012, SCC received approval from the NRA to progress the design and planning process for the Hughes Bridge widening element of the N4-N15 Sligo to Borough Boundary scheme. Following the successful granting of Part 8 planning permission in January 2013, funding to construct the scheme was approved in 2014. Construction of this scheme was completed in mid-2015.

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Also in 2015, Transport Infrastructure Ireland (TII) requested SCC to progress the planning, design and preparation of the environmental assessments and CPO for the proposed development running from north of Hughes Bridge to north of the R291 Rosses Point Road junction, a distance of some 670m. The proposed development is now therefore being developed as a stand-alone project to address the ongoing traffic congestion, junction capacity and road safety issues at this location. In 2015, Jacobs was appointed by SCC to progress the design of the proposed development including the environmental assessments, CPO, planning and statutory approvals, construction supervision and contract administration through to the handover of works.

The proposed development is consistent and compatible with the following national, regional and local policy documents:

- Trans-European Transport Networks;
- Building on Recovery: Infrastructure and Capital Investment Plan 2016-2021;
- National Spatial Strategy for Ireland;
- The Northern & Western Regional Assembly: Regional Planning Guidelines (2010-2022);
- Smarter Travel, 2009;
- Sligo County Development Plan 2011-2017; and
- Sligo and Environs Development Plan 2010-2016.

(b) Scheme Objectives

The main objectives of the proposed development are:

- To improve capacity in the road network to cater for existing and future traffic; and
- To improve road safety and reduce accidents.

The proposed development originates due to concerns regarding deficiencies in the existing road network in terms of capacity and safety. Its development is supported by national, regional and local government policy. Its objectives are furthermore consistent with those of the N4 Sligo Inner Relief Road which sought to remove traffic from the congested city centre and improve access to Sligo and its environs.

The proposed development will provide an appropriate level of service for all modes including improved facilities for pedestrians and cyclists, which will lead to associated improvements in overall road safety. This will have a positive net benefit to the regional and national economy and wider community in terms of savings on time, fuel and improved safety and community health benefits. The provision of the proposed development as part of a modern and efficient transport network will facilitate continued economic development of the area by maintaining strong connectivity between Sligo and the wider strategic national road network.

1.2 Description of the Proposed Road Development

The proposed development is situated north of the Garavogue River to the northwest of Sligo City centre. It extends over a distance of approximately 670m along the N4/N15 route corridor from a point just north of Hughes Bridge to a point just north of the N15 / R291 Rosses Point Road junction.

In general, the proposed development consists of an upgraded mainline carriageway, increased right-turning provision and improved facilities for pedestrians and cyclists at the three signalised junctions within the proposed development. The proposed development is an arterial road located on the suburban rural fringe. To the north, the proposed development links into a high-speed rural road, while to the southeast the city centre is located with higher concentrations of pedestrian and cyclist movements. Located between these contrasting areas, the proposed development design has adopted an approach to balance the needs of the various competing road users that is considered reasonable.

The proposed development includes the following elements of infrastructure:

- Carriageway improvements;
- Junction improvements;
- Pedestrian and cyclist facilities improvements;
- Structures including new retaining walls and a bridge replacement; and
- A new drainage system.

The proposed development was assessed against the overall scheme objectives and found to comply with these two objectives as outlined.

To improve capacity in the road network to cater for existing and future traffic - Capacity on the network will be increased through the provision of extended right turning lanes where congestion currently exists. The provision of an auxiliary lane southbound between the N15 Duck Street and R870 Markievicz Road junction will significantly improve the carrying capacity of the road thereby reducing congestion and providing future capacity benefits. Journey time reliability will also improve as a result. The traffic signals along the proposed development will be electronically linked to maximise their operational efficiency.

To improve road safety and reduce accidents - Safety on the route will be improved through the provision of longer dedicated turning lanes thereby reducing the instances of queuing traffic infringing into straight ahead lanes, and reducing potential instances of collisions. The inclusion of improved and additional facilities for pedestrians and cyclists will ensure greater levels of comfort and safety through full segregation adjacent to the northbound carriageway and widened and improved facilities adjacent to the southbound carriageway.

1.3 Outline of Alternatives

In line with the stated objectives of the proposed development, a number of options were developed and assessed to ensure that the most efficient, economic and effective final proposed development layout was achieved. The various options are set out below in more detail:

- Do Nothing;
- Do Minimum;
- Do Something Option 1;
- Do Something Option 2; and
- Do Something Option 3.

The 'Do Minimum' scenario considers no changes to the current alignment of the road being assessed but accounts for the likely construction of the nearby Eastern Garavogue Bridge river crossing option, while the 'Do Nothing' scenario does not consider any changes to the existing road network. The 'Do Minimum' was considered the baseline for the assessment, with the options being assessed from an operational traffic perspective and an economic perspective.

Traffic patterns were modelled for 2017, 2032 and 2047 for each of the five scenarios. Annual average daily traffic, journey times, the ratio of flow to capacity, and queuing and travel times were assessed. The assessment found that the 'Do Something' options provide benefits both along the proposed development route corridor and to the wider network including Sligo's commercial and shopping districts. These options provide additional traffic capacity thereby reducing congestions and traffic emissions.

Based on the modelling carried out it was concluded that Do Something Option 3 was the preferable option. Modelling showed that it reduces queuing to levels below the 'Do Nothing' and 'Do Minimum' options, it provides the greatest reduction in overall journey times and it has the lowest network-wide emissions.

1.4 Human Beings and Socio-Economics

The impacts to human beings considered in this assessment relate to direct physical impacts of the construction work and impacts on quality of life and safety arising from changed traffic flows and changes in commuting patterns as a result of the proposed development. The assessment also seeks to identify the land use changes in economic activities directly or in part attributable to the proposed development.

The assessment was undertaken in line with a number of guidance documents including the NRA (now TII) Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1, NRA, 2008).

Impacts on human beings and the socio-economic environment from the proposed development have been assessed for both the construction and the operational phase of the proposed development for the following socio-economic aspects:

- Economic activity and employment;
- Land use and development;
- Commuting patterns; and
- Tourism and recreation.

The assessment concluded that there would be no significant negative impacts on any of the socio-economic aspects during construction of the proposed development. The assessment concluded that there would be a slight positive impact to economic activity and employment due to the construction-related jobs associated with the proposed development. The assessment concluded that there would be a slight negative impact to land use development and commuting patterns during construction. It was concluded that there would be a negative impact to the Salmon Point amenity area due to restrictions throughout a significant period of the construction phase however, overall impact to tourism and recreation in the study area is expected to be minor-negative for construction.

The assessment concluded that there would be no significant negative impacts on any of the socio-economic aspects during operation of the proposed development. Overall the impact of the proposed development on land use and development during operation is expected to be neutral with the exception of the individual slight impacts for some individual private landowners. The assessment concluded that there will be a moderate positive residual impact on commuting patterns as a result of the operation of the proposed development. Traffic modelling showed that the flow of traffic will be smoother in and around Sligo as a result of the upgrade. Impacts to tourism and recreation are expected to be neutral during operation.

The assessment concluded that there would be no residual impacts to the other socio-economic aspects as a result of the operation of the proposed development.

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1.5 Flora and Fauna

The assessment considered and assessed the potential direct, indirect and cumulative ecological impacts on the terrestrial and aquatic ecology within the ecological study area (zone of influence) of the proposed development.

The assessment was undertaken in line with a number of guidance documents including the NRA Guidelines for Assessment of Ecological Impacts of National Road Schemes (Revision 2, NRA, 2009).

The proposed development is situated adjacent to the Garavogue Estuary and Garavogue River, and crosses the Copper River. The footprint of the proposed development is within Sligo City urban area and is predominantly characterised by the existing N4 and N15 road structure, with much of the proposed land-take comprising of built lands and other urban habitats. The footprint of the proposed development (as with the existing road) overlaps the Cummeen Strand/Drumcliff Bay cSAC/pNHA and lies adjacent to the Cummeen Strand SPA.

As well as a desktop survey, a number of specialist field surveys have been carried out to establish the terrestrial and aquatic baseline within and adjacent to the proposed development including:

- Habitat surveys;
- Bat surveys,
- Breeding and wintering bird surveys;
- Mammal surveys;
- Fish Survey; and
- Invertebrate sampling.

There are six designated sites within 10km of the proposed development and of these, only three are considered to be potentially impacted by the proposed development:

- Cummeen Strand SPA;
- Cummeen Strand/Drumcliffe Bay cSAC; and
- Cummeen Strand/Drumcliffe Bay pNHA.

A Natura Impact Statement (NIS) prepared in line with the requirements of the European Union Habitats Directive assesses the potential adverse effects to the integrity of the SACs and SPAs (within 15km of the proposed development).

In addition to the above protected sites there are a number of protected species, namely birds and bats, recorded in the vicinity of the proposed development.

Invasive species were found to be present in the north-west corner of the proposed development footprint on the Garavogue Estuary shoreline and along the hedged boundary of the existing road.

Key sources of ecological impact arising from the construction of the proposed development include:

- Surface water run-off during construction;
- Removal/damage to habitats;
- Mortality or injury of terrestrial species during vegetation clearance;
- Disturbance from lighting, vibration, noise or human presence; and
- Spread of invasive species during earthworks.

There are predicted to be no significant impacts during operation due to the combination of embedded mitigation in the design, and the small scale of the proposed development.

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Mitigation measures for construction phase impacts include:

- Preliminary and detailed Erosion and Sediment/Silt Control Plan;
- Species-rich native grass seed mixes and native scrub hedgerow mixes to be used for landscaping;
- Site compound to be located on existing hardstanding;
- Invasive Species to be treated prior to construction;
- Vegetation not to be removed between March and August; and
- Monitored by an Ecological Clerk of Works.

With the implementation of such mitigation there will be no residual impacts above Local level at either construction or operational phase.

1.6 Surface Water

The potential impacts on various surface water aspects such as water quality, flooding, geomorphology / hydrogeomorphology and amenity value, likely to be caused by the proposed development, have been identified as a result of:

- Water quality impact on receiving rivers and streams from routine carriageway runoff and accidental spillages;
- Increased flood risk as a result of reducing the conveyance of the existing watercourse and/or increasing runoff rates and volume; and
- Construction work in or adjacent to watercourses including construction of the Copper River Bridge.

The surface water assessment was undertaken in line with a number of guidance documents including the NRA Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008).

The study area extends 250m beyond the landtake boundary of the proposed development. Where required the study area extends beyond this to account for potential impacts outside this 250m extent.

A desktop study, hydrological field surveys, baseline water quality monitoring and consultation were all undertaken in order to gain an understanding of the hydrological environment in the vicinity of the proposed development.

The major water feature within the study area is the Garavogue River and Estuary. There is also one minor watercourse in the study area, the Copper River. This watercourse lies to the north of the Garavogue River and discharges into the Garavogue Estuary.

No drinking water is abstracted from within the study area.

Sligo Harbour and the Garavogue Estuary are considered an important migratory route for a number of fish species, with four known red data book fish species present in the area.

There is one water-related amenity area identified within the study area, namely Salmon Point amenity area.

(i) Flood Risk

A Flood Risk Assessment (FRA) in line with the Guidelines for Planning Authorities (GPA) 20: The Planning System and Flood Risk Management (OPW, 2009), has been conducted for the proposed development. The FRA concluded that the flood risks and impacts associated with the proposed development are low and negligible.

(ii) Water Quality

Both the Garavogue River and Estuary are achieving good status under the EU Water Framework Directive. An assessment of the Copper River found it to be of poor status.

During construction there is the potential for pollution of surface water features from sediment and polluting substances entering watercourses as a result of surface water runoff and spills on-site. Potential sources during the construction phase include:

- Works on the bridge structure over the Copper River;
- Construction of retaining walls within and adjacent to watercourses;
- Excavations;
- Site clearance works;
- Reconstructive and resurfacing works;

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- Stockpiling of materials;
- Accidental spillages; and
- Construction plant and vehicle washing.

To prevent or reduce the amount of sediment released into watercourses the contractor will be required to implement a number of mitigation measures as outlined in the main EAR and the preliminary Erosion and Sediment Control Plan (pESCP) and to prepare a more detailed Erosion and Sediment/Silt Control Plan (dESCP) prior to commencing the construction works.

In addition, carriageway runoff during the operational phase may contain pollutants that can have an adverse impact on the quality of the water within the receiving watercourse or waterbody and therefore the drainage system identified provides a form of treatment to ensure that any negative impact is reduced. Under the proposed development the drainage network will be split into three separate catchments and will outfall at three locations, one into the Garavogue Estuary upstream of Hughes Bridge and two downstream in the Copper River. Petrol interceptors will be provided on all three outfalls. In addition, one of the outfalls in the Copper River will include an attenuation treatment pond based on the outcome of the assessment.

The assessment concluded that, with implementation of appropriate mitigation measures, the proposed development will not cause the deterioration of water quality within the adjacent waterbodies either during construction or the subsequent operational phase.

(iii) Geomorphology

TII guidelines recommend that geomorphological impacts are considered within the environmental assessment. The Water Framework Directive defines 'hydromorphology' as the hydrological and geomorphological condition of surface water bodies. The predicted residual long-term impact of the proposed development on geomorphology after adherence to the mitigation measures during construction and operational phases is considered negligible.

1.7 Geology, Soils and Hydrogeology

The assessment was undertaken in line with a number of guidance documents including the NRA Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2008).

(a) Geology, Soils and Contamination

The geology and soils assessment considered the impacts on geology and soils associated with the construction and operational phases of the proposed development.

In addition, the assessment of impacts has also considered the potential for contamination sources to be introduced during construction and/or operation of the proposed development that may potentially cause contamination of the sub-surface and impact on identified receptors.

The study area for the assessment extended 250m from the proposed development. A desk based assessment was carried out, reviewing Environmental Protection Agency (EPA) and Geological Survey of Ireland (GSI) online data, historic maps and previous assessments. The existing ground in the study area is mainly made ground consisting of sandy gravelly clay, with rubble or cobbles, and asphalt and concrete in places. Beneath the made ground is glacial till. The bedrock geology within the study area is the Glencar Limestone Formation.

As the site is largely underlain by made ground there is a potential it for contaminants to be present in the soil present which could be disturbed during construction. The impact of this excavation and temporary site storage has been assessed as moderate.

The impact to the superficial and bedrock geology has been assessed as imperceptible.

During construction, safe methods of work will be implemented to protect workers from direct interaction with any potentially contaminated soil, contaminated groundwater or material, using appropriate PPE as a last resort. Waste management procedures including a Waste Management Plan, to be approved by Sligo County Council, shall be put in place during construction.

(b) Hydrogeology

The hydrogeological assessment assesses the potential impacts generated by the construction and operational phases of the proposed development on the groundwater environment, including groundwater water supplies and surface water bodies potentially supported by shallow groundwater.

The bedrock underlying the study area is categorised as a Locally Important (LI) aquifer which is moderately productive only in local areas, and is poorly productive for the most part. Groundwater vulnerability is moderate across the study area with a small area of high vulnerability in the north. No karst features or groundwater abstractions were identified in the vicinity of the study area.

The assessment of likely impacts to groundwater concluded that the significance of impact from accidental spillages is slight for the made ground / glacial till unit and imperceptible for the bedrock. For all other possible impacts, the significance was deemed to be imperceptible.

1.8 Air Quality and Climate

Air quality monitoring indicates that the existing air quality environment in the area of the proposed development is generally well within the national and European Union (EU) ambient air quality standards. The main pollutants associated with traffic assessed under this study are nitrogen dioxide (NO₂), carbon monoxide (CO), benzene, and PM₁₀ and PM_{2.5}.

The assessment was undertaken in line with a number of guidance documents including the NRA Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (NRA, 2006).

The greatest potential impact to air quality during construction will be through dust emissions from construction activities such as excavation, earth moving and backfilling, as well as from vehicles travelling to and from the site. Dust minimisation measures will be put in place to minimise dust emissions during construction.

Traffic flow information has been used to model pollutant levels under various traffic scenarios to assess whether any significant air quality impact on five nearby sensitive receptors may occur. The modelling found that levels of traffic-derived air pollutants will not exceed the ambient air quality standards either with or without the proposed development in place. The impact of the proposed development on air quality in terms of pollutants at all five sensitive receptors was assessed to be imperceptible.

The likely air quality impact on ecology was assessed and found that no significant impact would occur as a result of the proposed development.

Greenhouse gas emissions as a result of the proposed development were assessed to be imperceptible in the long and short term due to the scale and nature of the proposed development.

1.9 Noise and Vibration

The assessment was undertaken in line with a number of guidance documents including the NRA Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004).

(a) Noise

This assessment considers the anticipated types of noise and the impacts of same associated with both construction and operation of the proposed development.

An environmental noise survey was conducted to quantify the existing noise environment in the vicinity of noise-sensitive locations that may be affected by the proposed development.

During construction works a variety of items of plant will be in use, including breakers, excavators, dump trucks and generators in addition to general road surfacing and levelling equipment. Due to the nature of the activities undertaken on construction site, there is the potential for generation of significant levels of noise.

A series of mitigation measures have been proposed to mitigate noise levels during construction. This includes adherence to best practice guidelines, timing of works, silencers and acoustic covers on machinery as applicable, and other noise control measures to ensure that construction noise impact is kept to a minimum.

With regards to operational noise levels, computer-based modelling has been undertaken to quantify the traffic noise level associated with the operation of the proposed development.

For two receptors (both regarding the HSE Sligo Primary Care Centre), with the proposed development in place the noise levels result in the requirement for noise mitigation. It is proposed to increase the height and length of the existing boundary wall when it is reinstated. With this mitigation in place, the noise levels are calculated to be within the design goals as set out in the NRA guidelines at all locations assessed.

(b) Vibration

A survey of vibration along the proposed route corridor was not undertaken as levels associated with existing roads would not be expected to be of a magnitude sufficient to cause disturbance to people or structural damage to property. Furthermore, vibration was not perceptible at any of the noise survey locations.

The potential for vibration at neighbouring sensitive locations during construction is typically limited to demolition, excavation works and lorry movements on uneven road surfaces. Measures shall be taken to minimise vibration due to plant and machinery on the site and no machinery which uses the dropping of heavy weights for the purpose of demolition shall be permitted.

As a vehicle travels along a road, vibration can be generated in the road and subsequently propagate towards nearby buildings. Such vibration is generated by the interaction of a vehicle's wheels and the road surface. Vibration is unlikely to cause a perceptible impact to properties near the road as long as the road surface is subject to normal maintenance requirements. Problems attributable to road traffic vibration can therefore largely be avoided by normal routine maintenance of the road surface.

1.10 Landscape and Visual

The landscape and visual assessment involved a desktop study of the mapping and aerial photography of the proposed plan location, as well as visits to the site and environs of the proposed development.

The assessment was undertaken in line with a number of guidance documents including the NRA Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1, NRA, 2008).

The proposed development is located on the northwest side of Sligo City and runs from a point just north of Hughes Bridge to north of the N15 / R291 Rosses Point Road junction. Prominent visual features within the landscape include:

- Existing road infrastructure;
- Hughes Bridge;
- Sligo Harbour;
- Sligo Bay;
- Benbulbin and the Dartry Mountain Range;
- Constance Markievicz House;
- Salmon Point (a coastal amenity area);
- Bridge over the Copper River;
- Well maintained grasslands; and
- Residential properties.

There are no specific listings for protection of scenic routes or views or for the protection of trees or other plantings within the area of the proposed development. There are no protected structures or architectural conservation areas located within the extents of the proposed development. Constance Markievicz House is however a protected structure which closely overlooks the road corridor.

The proposed development involves the upgrade of a short, heavily trafficked section of an existing major road corridor and therefore, the general area is neither particularly significant nor sensitive to the nature of the development as proposed. The main aspects of the proposed development that have the potential for significant landscape and visual impact are:

- Loss of grounds around the coastal amenity Salmon Point;
- Loss of tree and shrub vegetation;
- Loss of grounds, mature trees and setback of wall at Constance Markievicz House;
- Works at and adjoining Copper River;
- Loss of grounds, plantings and setback of boundary wall at the Kilronan property; and
- Construction-related visual impacts.

The assessment found that there will be a degree of temporary albeit significant negative impact during the construction phase of the proposed development for some receptors such as the Salmon Point amenity area, the HSE Care Centre and the Kilronan property. After construction, most locations will see no significant medium to long-term impact, however there will be longer-term moderate impacts to both the Constance Markievicz House and Kilronan property due to the need to permanently set back their walls and take some of the lands for the development.

Several mitigation measures for both the construction and operational phases of the proposed development are proposed. These include removal and retention of some existing features for reinstatement after construction completed, matching of new walls to existing walls, and new planting.

1.11 Archaeology, Cultural Heritage and Architectural Heritage

The cultural heritage assessment was undertaken in line with a number of guidance documents including the NRA Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes, (NRA, 2005).

(a) Archaeological & Cultural Heritage

No known archaeological sites have been identified in the area within and around the proposed development. However two areas of archaeological potential were identified within the study area, namely the Garavogue River area of archaeological potential and the Copper River area of archaeological potential.

Impacts resulting from the construction of the proposed development have been identified for the two areas of archaeological potential. In both cases impacts were assessed to have an imperceptible significance. Mitigation will be by preservation in situ where feasible and preservation by record where this is not possible. Following mitigation, the predicted impacts during construction are reduced to neutral.

There are no operational impacts predicted and therefore no mitigation measures required.

(b) Architectural Heritage

A total of six architectural heritage sites were identified within the study area; four of local importance and two of regional importance.

Impacts resulting from the construction of the proposed development have been identified for two of the six assets. Markievicz House will be permanently impacted with the impact significance being assessed as slight. The impact to the Copper River Bridge was assessed as imperceptible. After mitigation there will be no change to the predicted impacts.

There are no impacts to the six sites predicted during the operation of the proposed development.

1.12 Waste Management

This assessment considers the anticipated types of waste and the impacts of same associated with both the construction and operation of the proposed development.

Waste will be generated during the construction phase as a result of:

- Excavated materials / demolished structures;
- Pile arisings;
- Surplus materials; and
- General waste management.

It is likely that the majority of excavated material will be unacceptable for reuse and will therefore be disposed of off-site. Where this is the case this material will be sampled for waste acceptance criteria laboratory testing. Based on the results it will be sent to an appropriate licensed/permitted facility.

A Contractor Project Construction and Demolition Plan will be prepared for the provision of waste management during the construction phase of the proposed development. The plan will take into account the best practice guidance and will be subject to approval and monitoring by Sligo County Council.

The impacts associated with the proposed development after adherence to the mitigation measures during the construction phase are slight to imperceptible.

The main potential waste sources during the operational phase of the proposed development are associated with road and drainage system maintenance, green waste from landscaping maintenance and wastes generated through littering.

Management of wastes arising during the operational phase of the proposed development will be the responsibility of Sligo County Council, or contractors appointed by the council to provide drainage cleaning, waste management and landscaping services.

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1.13 Material Assets

The material assets considered as part of the material assets assessment include major utilities and imported material.

The impact to utility services shall be permanent in nature, and occur during the construction phase. The impact on services in the absence of mitigation would be profound as many of the services would no longer be functioning. There will be no additional impact during the operational phase. When the mitigation measures detailed in the EAR are implemented such as protection and diversion of utilities, the magnitude of the impact is reduced to imperceptible as the services will continue to operate in their current form.

The impact from the importation of material to the site is associated with the manufacture and transportation of these materials. The impact significance of imported material is assessed as significant due to the increased HGV movements associated with importing the material. When mitigation measures detailed in the EAR are implemented such as sourcing materials locally, the magnitude of the impact is reduced to slight.