14 MATERIAL ASSETS

There is no clear-cut definition of what constitutes a 'material asset', however a material asset can generally be categorised under the 'built environment' (transport, energy and services infrastructure, settlement and commercial land, community resources and the historical environment, etc) and natural environment (forestry, open space including agriculture, minerals, water resources). Historical Environment is dealt with under Chapter 15, Cultural Heritage whilst there is a dedicated Chapter for Agriculture and Water Resources. This Chapter therefore considered transport and utilities.

14.1 Material Assets – Transport

14.1.1 Introduction

This EIAR Chapter reports on the outcomes of the assessment of the Proposed Scheme in relation to Transportation. This chapter describes the consultation that has been undertaken during the EIA, the scope of the assessment, assessment methodology and a summary of the baseline information that has informed the assessment.

The assessment reports on the likely environmental effects, the further mitigation measures which may be required to prevent, reduce or offset any adverse effects or further enhance the beneficial effects. The conclusions are provided in terms of the residual effects and whether these are considered significant.

This chapter is intended to be read as part of the wider EIAR with particular reference to the introductory chapters of the EIAR.

14.1.2 Assessment Methodology

14.1.2.1 Study Area

Given the nature of the Proposed Scheme, the study area is contained within the central area of Burnfoot as indicated in Figure 14.1 below.

14.1.2.2 Baseline

As indicated in Figure 14.1 above, the Proposed Scheme site is served by the R238 and R239 which are regional class roads. Regional class roads are characterised as single carriageway roads of regional and local importance.

The R238 connects to the N13 via a roundabout junction to the south of the identified study area. The N13 is one of the National Primary Roads which are characterised as predominantly single carriageway, with some dual carriageway. Speed limits are generally 100km/hr and carries strategic traffic.

Therefore, it is clear that the Proposed Scheme is served by both the local and strategic road network.

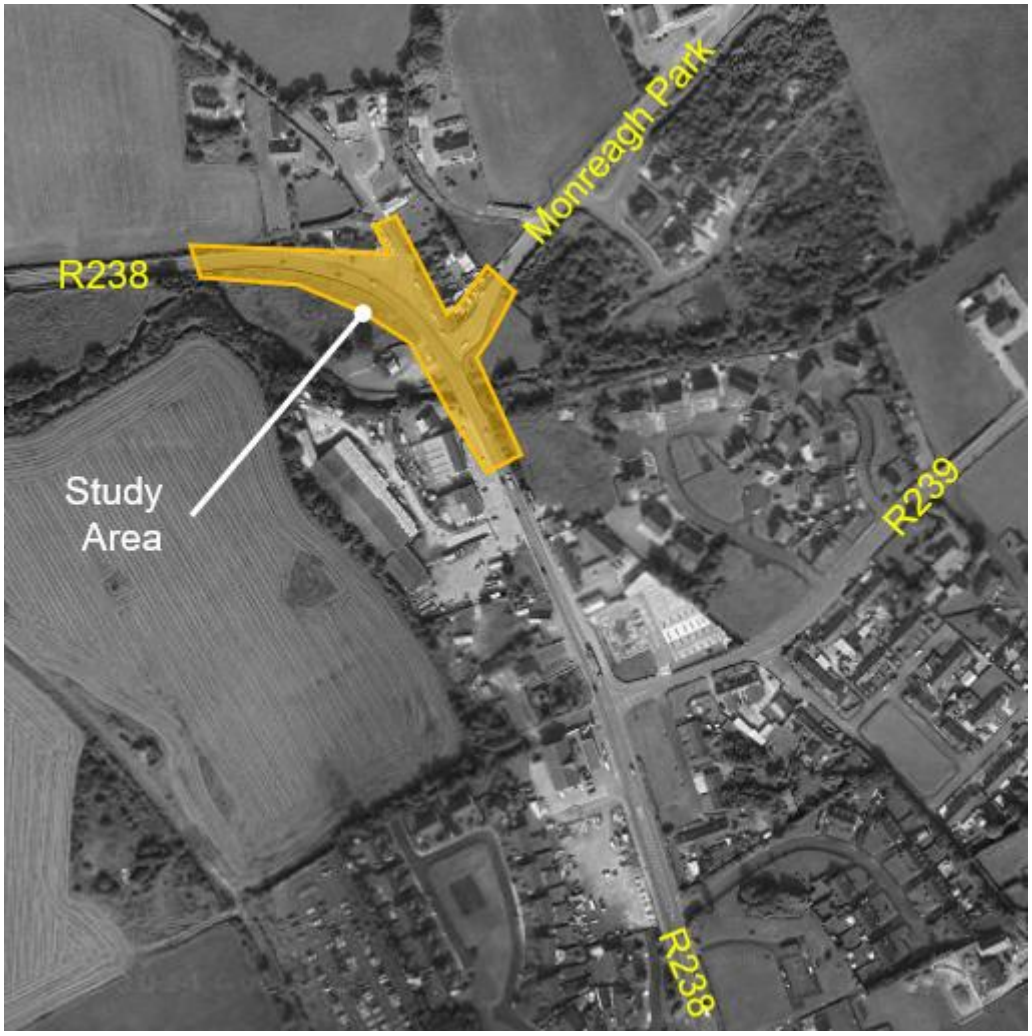

Figure 14.1: Study Area

14.1.2.3 Legislation and Guidance

The following legislation and guidance has been considered within this assessment:

- Project Ireland 2040 – National Planning Framework (2019);
- Transport Infrastructure Ireland (TII) Traffic and Transport Assessment Guidelines;
- Smarter Travel, A Sustainable Transport Future – A New Transport Policy for Ireland 2009-2020;
- Climate Action Plan (2023);
- Design Manual for Urban Roads & Streets (DMURS);
- County Donegal Development Plan (2024-2030).

14.1.2.4 Consultation

Extensive consultation has been undertaken with Donegal County Council Roads department in relation to the road resign and bridge structure across the Burnfoot River. The design of the permanent and temporary bridge works and associated road design has been signed off by the Roads Department. The DCC Roads Section was also involved in the collaborative workshops undertaken during the development of the scheme and TII have also responded to the EIA Scoping as detailed in Chapter 3, Scoping and Consultation.

14.1.2.5 Assessment Criteria and Assignment of Significance

The Assessment Criteria and Assignment of Significance is based on the thresholds identified within the Traffic and Transport Assessment Guidelines (May 2014) published by TII. These guidelines indicate a detailed assessment is required when the following thresholds are exceeded.

- Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road;
- Traffic to and from the development exceeds 5% of the traffic flows on the adjoining road where congestion exists or the location is sensitive.

The Guidelines also states that where applications affect National Roads, a Transport Assessment should be requested if the following thresholds are exceeded.

- Development traffic exceeds 10% of turning movements at junctions with and no National Roads.
- Development traffic exceeds 5% of turning movements at junctions with National Roads if location has potential to become congested or sensitive.

For this assessment there will be 1 receptor, the R238. The significance of the traffic impacts upon this receptor, using the criteria set out above will determine the sensitivity and magnitude of the Proposed Scheme.

14.1.2.6 Significance of Effects

The significance of effects of the Proposed Scheme as it relates to transport is predicted to be low as an alternative access road will be constructed whilst the construction work of the Proposed Scheme is ongoing. Therefore, there will be no detrimental impact upon existing traffic and transport movements.

14.1.3 Baseline Environment

14.1.3.1 Existing Traffic Volumes

As indicated above, the R238 will be the main arrival / departure route for access to the Proposed Scheme. The R238 currently carries an Annual Average Daily Traffic (AADT) Flow through Burnfoot of 12,380. The AADT on the N13 to the south of the site is 9,215 (with 4% HGVs).

14.1.4 Description of Likely Significant Effects

14.1.4.1 Assessment of Construction Effects

During the peak construction period of the Proposed Scheme, it is predicted that there will be a maximum of 64 HGV trips to the site. This equates to 32 loads and this will occur when the existing embankment material is being removed in addition to other material being brough to the site. At the peak of the construction there is anticipated to be up to 50 staff at the site. As with most construction sites, staff are anticipated to arrive in work vans in teams of 4 – 5 persons. Allowing for a percentage of singular travel (assume 25% - although likely to be less in practice) this equates to a total of 21 staff vehicles[1], or 42 trips, accessing or exiting from the site during

[1] 21 vehicles comprised of 13 single vehicles (>25%) plus 8 vehicles carrying teams of up to 5 persons

the peak construction period. Parking for all staff will be facilitated in the temporary construction compounds which will be set up for the duration of the construction programme.

Therefore, during the peak construction period, the impact upon the R238 represents a 0.85% (106/12,380) increase in traffic on a temporary basis, which is an insignificant impact upon the surrounding highway network.

14.1.4.2 Assessment of Operational Effects

There are no transport impacts associated with the operational phase of the Proposed Scheme.

14.1.5 Inter-relationships

Given the predicted low daily volume of construction traffic and the small impact upon the existing traffic volume on the R238, there is unlikely to be any inter-relationships with any of the other chapters of the EIAR.

14.1.6 Mitigation and Monitoring

During the construction period of the Proposed Scheme, a temporary road will be constructed to ensure that there is no impact upon traffic progression through Burnfoot during the construction period. The temporary road proposal is indicated in Figure 14.2 below.

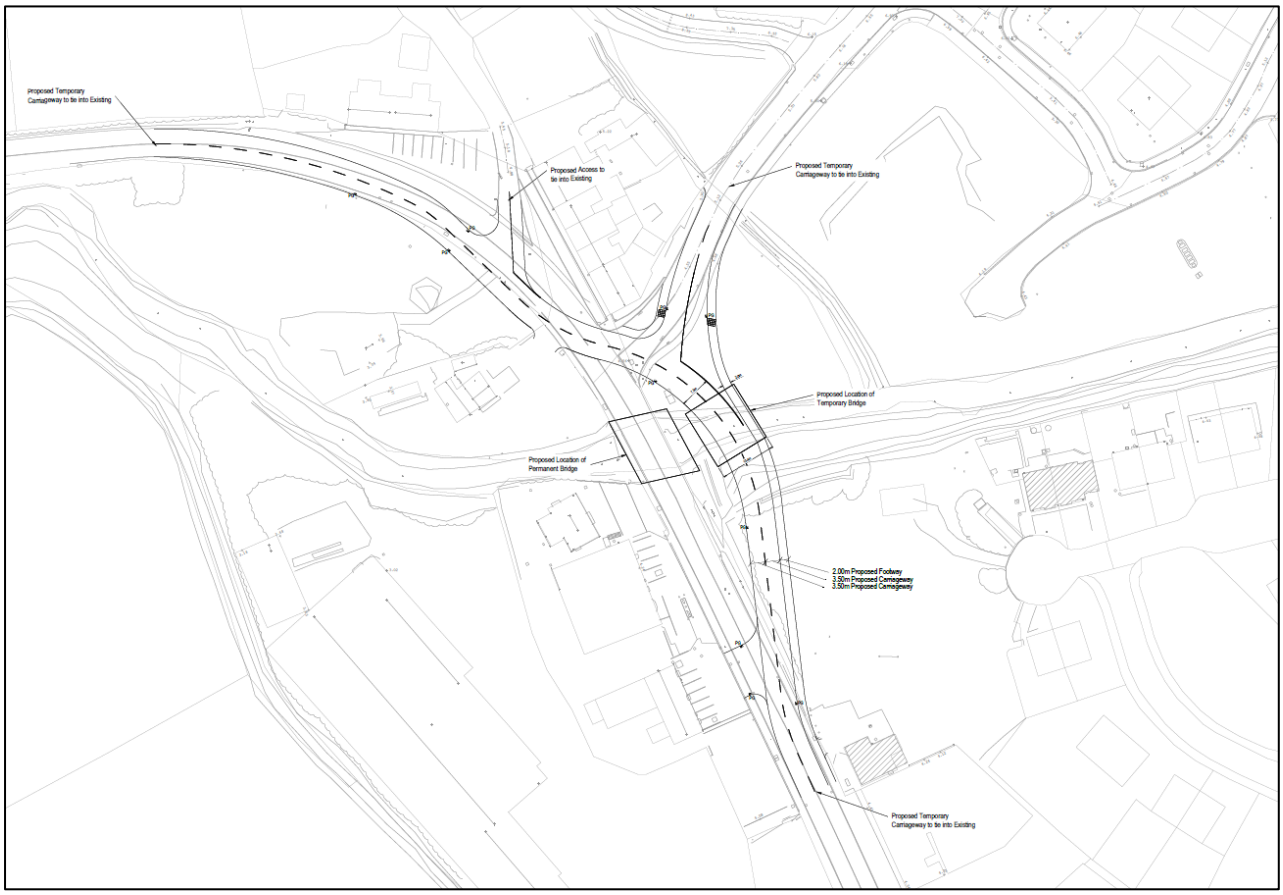

Figure 14.2: Temporary Road (During Construction)

14.1.7 Monitoring

There is no monitoring proposed of the transport impacts of this Proposed Scheme given that there are no significant effects predicted.

14.2 Potential Cumulative Effects

Given the low volume of traffic associated with the peak construction period, the Proposed Scheme is predicted to have no cumulative traffic / transport effects. The Proposed Scheme, during the peak construction period generates less than 1% impact against the existing AADT on the R238.

14.3 Residual Impacts

There will be no residual traffic / transport impacts associated with the Proposed Scheme as the construction of the temporary road offsets any associated traffic & transport impacts. There is no operational traffic associated with the Proposed Scheme.

14.4 Summary of Effects

The construction phase of the Proposed Scheme is predicted to have an insignificant effect on the surrounding transport infrastructure.

14.5 Limitations of Assessment

There are no limitations that would affect the robustness of this assessment. The assessment has considered the impact of the peak construction period upon the surrounding highway network.

14.6 Material Assets – Utilities

14.6.1 Introduction

This section of the EIAR considers the impact of the Proposed Scheme upon other Material Assets other than transport which is addressed in Section 14.1. The requirement to consider the direct and indirect significant effects of a development on land use and material assets is outlined within Section 171A of the Planning and Development Act 2000.

14.6.2 Assessment Methodology

14.6.2.1 Study Area

Burnfoot lies at the base of the Inishowen Peninsula east of the confluence of two small catchments, the Burnfoot River and the Skeoge River. The Burnfoot River flows east to west of the village before both drain out to Lough Swilly via a tidal lagoon behind Inch Island. The Skeoge River drains an area including the outskirts of the City of Derry/Londonderry and then flows in a north westerly direction, through Bridgend and past the south west of Burnfoot village to meet the Burnfoot River. The Burnfoot River is subject to flash flooding with the village at risk of fluvial flooding and the float, reclaimed agricultural lands downstream subject to combined coastal and river flooding.

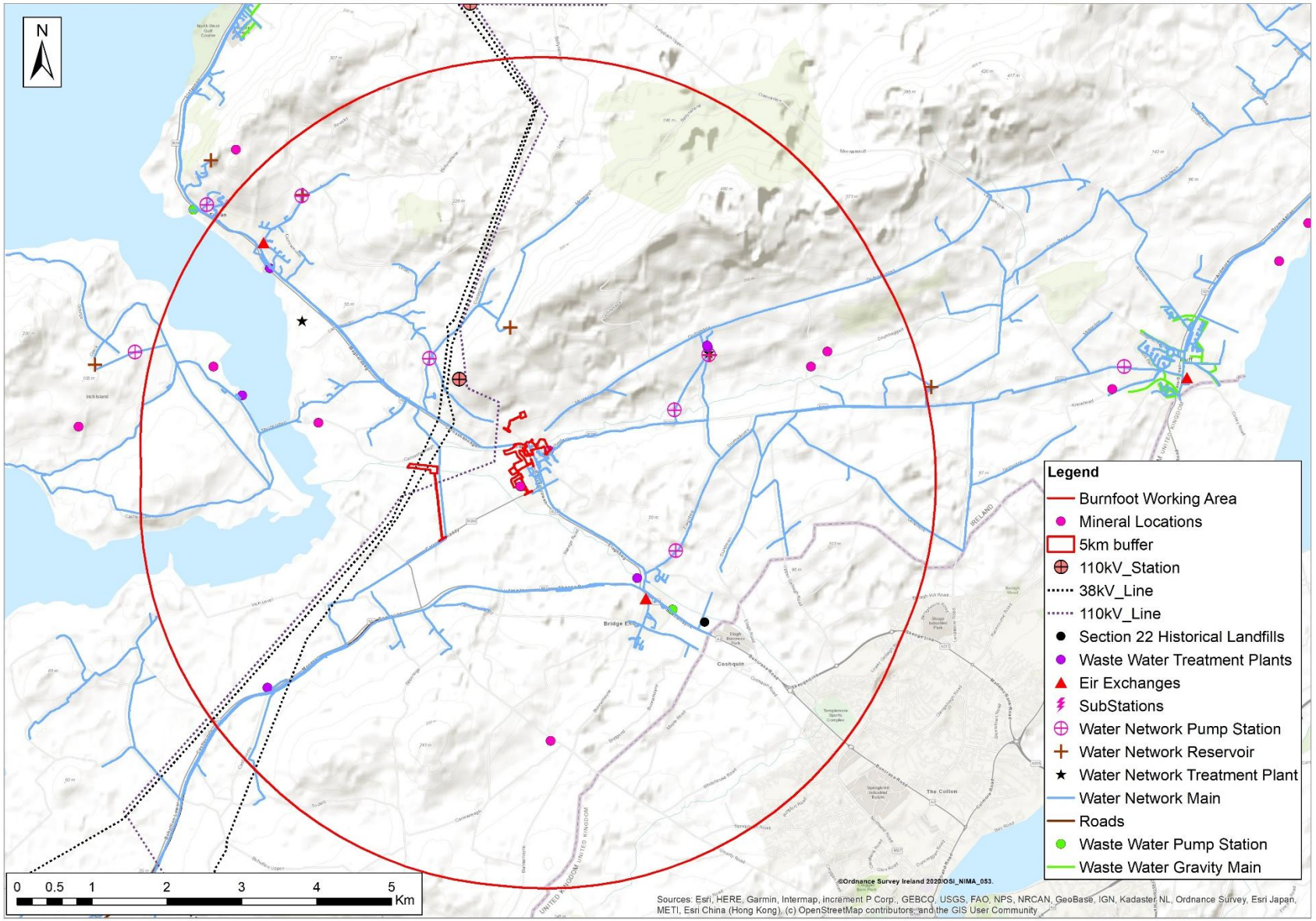

Figure 14.3: Material Assets

14.6.2.2 Baseline

Burnfoot comprises mainly residential and commercial properties. In order to determine the impacts of the Proposed Scheme on material assets in Burnfoot, it is important to take into consideration:

- Buildings and Structures
- EPA Licensed Facilities
- Water
- Wastewater Treatment
- Communications infrastructure and Utilities
- Road Network
- Waste Management
- Other projects in the Area

14.6.2.3 Legislation and Guidance

The Environmental Protection Agency's Guidelines on the Information to be contained in EIAR (EPA Ireland, 2022) highlights the amendments to Article 3(1) of amended European Union (EU) Environmental Impact Assessment (EIA) Directive which states that:

> *"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on the following factors: d) material assets; […]".*

Moreover, Annex IV, paragraph 4 requires an EIA to contain:

> *"A description of the likely significant effects of the project on the environment resulting from, inter alia, material assets".*

When outlining the scope of environmental factors covered by the EIA Directive within the European Commission's guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017), "population and human health" is defined as follows:

> *"Material Assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils".*

The assessment methodology follows a source-pathway-receptor model to identify and assess effects on material assets that are plausible and directly attributable to the Proposed Scheme. The presence of a hazard does not constitute a risk to material assets.

Where a source-pathway-receptor linkage exists, it is then the nature of a specific hazard source or positive influence; the magnitude of impact via the pathway of exposure; and the sensitivity of the receptor that will determine what level of risk or benefit is predicted, if any.

When defining potential material asset determinants associated with the Proposed Scheme, it is useful to consider the types of material asset that are important to the functionality of Burnfoot. Material assets that are

considered to be affected by the Proposed Scheme during the construction and operation phases are described in Section 14.6.4.1 and Section 14.6.4.2.

In this instance, the assessment provides qualitative and quantitative analysis of the potential impacts on material assets, and has been prepared using the specialist assessment undertaken in other chapters of the EIAR.

14.6.2.4 Consultation

As detailed in Chapter 3 Scoping and Consultations, the Proposed Scheme has consulted with the public and prescribed bodies in order to accumulate responses which may impact all receptors. Consultation with the public through the Opening Public Consultation and Public Information Day in particular guided the Proposed Scheme in terms of gathering local knowledge to inform the Proposed Scheme and to ensure public needs are met.

14.6.2.5 Assessment Criteria and Assignment of Significance

The assessment of significance of effect is based on the sensitivity of the receptor (Section 14.6.2.5.1) and the magnitude of any change (Table 14.2).

14.6.2.5.1 Receptor Sensitivity

Within the Burnfoot area, the material asset receptors will range in level of sensitivity; as such, it is not possible to allocate a fair or accurate classification to each receptor. On this basis, a precautionary approach has been applied by assuming that material assets within the study area are of uniformly high sensitivity.

Table 14.1: Receptor Sensitivity and Description

Sensitivity of Receptor	Typical Description
Very High	Very high importance and rarity, international scale, and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

14.6.2.5.2 Magnitude of Impact

The terms in Table 14.1 have been used to describe the magnitude of predicted impacts.

Table 14.2: Definition of Magnitude

Magnitude	Typical Descriptors
High	Loss of material asset and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse). Large scale if major improvement of material asset quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of material asset, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality, or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse). Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction

14.6.2.5.3 Significance of Effects

A combination of receptor sensitivity and the magnitude of impact (as defined in the assessment) have been applied to form an assessment as to the significance of effect, using the Matrix as shown in Table 14.3.

Table 14.3:Significance of Effect

Receptor Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible	Negligible or minor	Minor	Minor or moderate
Medium	Negligible	Minor	Moderate	Moderate or major
High	Negligible	Minor or moderate	Moderate or major	Major

14.6.3 Baseline Environment

Burnfoot hosts a variety of material assets that are crucial to the community. Previous flooding has endangered these material assets and the Proposed Scheme will deliver flood relief to the town. The Proposed Scheme will protect residents, properties, and the wider environment. The description of the likely significant effects on material assets during the construction and operation phases is outlined in section 14.6.4.1 and section 14.6.4.2.

14.6.4 Description of Likely Significant Effects

14.6.4.1 Assessment of Construction Effects

Impacts on material assets during the construction phase of the Proposed Scheme have the potential to be significant. Many of the impacts will be short term and temporary and mitigation is technically feasible to reduce potential impacts.

14.6.4.1.1 Buildings and Structures

The main impact is likely to be on commercial and residential properties in the vicinity of Burnfoot. The construction of hard defences will require heavy machinery to be manoeuvred through private residential/ commercial property. Disruption is expected at the properties in Líos an Greíne and Páirc an Grianán housing estates, one residential property on the left bank and Carmel's hair salon on right bank of Burnfoot River. Occupation of back and side gardens of these properties is required for the construction of site pile walls along the top of the riverbank for the duration of the construction phase of the Proposed Scheme. These properties will lose access to side and bank gardens as a result of the works. Existing boundary fencing and garden sheds will be removed and replaced when works have been completed. Fencing will be covered for privacy of these properties for the duration of the construction phase.

In addition, access routes will be required to enable defences on both sides of the river and upstream of the Burnfoot bridge. This will involve plant movement on public roads for the duration of the works and will be considered in the contractors traffic management plan. The main access points will be provided for the R238, R239, Monreagh Park and Carnashannagh Road. Plant movements on public roads will be linear in nature within the confines of designated working areas. Transportation of materials such as clay sheet piles, reinforced steel, concrete, pipework, and topsoil on public roads/ constructed haul roads can result in accidental spillages and debris beyond the working area. It will be necessary to ensure all machinery is in working condition and is well maintained thus minimising oil leaks and noise levels to the adjacent properties is reduced as far as possible. Plant and materials will be stored at site compounds away from any watercourses.

The establishment of site compounds and working areas to accommodate welfare facilities, site office and material storage will involve the stripping of topsoil and the stoning of the area for moving plant to reduce dust generation. The stockpiling of topsoil for embankment has the potential for sediment runoff from the construction site to the river during construction. Additionally, the pouring of concrete has the potential to introduce contaminants to surface waters and may impact watercourses.

The removal of the existing Burnfoot bridge will result in loss of a structure of low historical significance. The bridge forms part of mid-eighteenth century development of road network for the efficient transport of goods

and people to and from the Inishowen peninsula. The Architectural Heritage Impact Assessment has concluded that the loss of the historic bridge will have negative impact on structures as a result of the Proposed Scheme. The Proposed Scheme will have an overall positive effect in reducing flood risk. It may be possible to incorporate some of the masonry material in the design of the new bridge such as cladding to retain some features of the existing bridge.

There are proposed removal of the two sections of embankment downstream of Burnfoot to allow for floodplain reconstruction. Embankment on the left bank of Burnfoot River is a part of OPW Arterial Drainage Scheme and the other embankment on right bank is under private ownership. Removal of embankments will be carried out by excavator and dumper and a lorry to remove material. Where appropriate, material may be given landowner. Ultimately, the removal of the embankments and the reconnection of the floodplain will result in positive effect to the wider community.

The magnitude of the potential impact to Buildings and Structures from increased traffic and disruption with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment.

The magnitude of the potential impact to Buildings and Structures from demolition and relocation of property with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be high. The significance of the environmental effect is therefore minor or moderate with the continued implementation of mitigation measures based on the low sensitivity of the receiving environment

14.6.4.1.2 EPA Licensed Facilities

Another likely impact is on EPA licensed facilities in the vicinity of the Proposed Scheme area. There is one Industrial Emissions Licensed Facility that in close proximity to the Proposed Scheme. This is:

- E&I Engineering Limited – IEL License P1116

This facility will not be directly impacted by the Proposed Scheme however there is the potential for impacts based on construction traffic which may use the R238 and the Slab Road during construction of the Proposed Scheme. However, impacts are expected to be short term and temporary until works have been completed. Mitigation is possible through the management of construction traffic.

Therefore, the magnitude of the potential impact to EPA Licenced Facilities from the movement of heavy machinery in the area with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment.

14.6.4.1.3 Water

Culvert Upgrades and Instream works

The majority of the Proposed Scheme consists of walls and embankments either located on top of the bank or set back from the river and will require no instream works. There are, however, three elements where instream works are unavoidable. Two of these are relatively minor and relate to the culvert upgrade and culvert inlet structure on the Carnashannagh stream by the third is the replacement of the Burnfoot bridge. The works associated with the construction of the temporary bridge, demolition of the existing bridge and construction of the new bridge will require in-channel working. This will involve the placement of new abutments and supports for both the temporary and permanent structures, which will be around or below riverbed level.

Construction and demolition of the temporary and permanent bridges will require in-channel working where sensitive fish are present (i.e., salmon lamprey, trout, and eels in the Burnfoot River). As described in Inland fisheries Ireland's (IFI) document, 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016) should be consulted. In salmonid rivers such as the Burnfoot, the guidelines require that all in-stream works should be carried out during the period from July to September; any requirement for works to be conducted earlier should seek approval from IFI. This is required as the Burnfoot River is important for salmon and sea trout.

The culvert upgrades to the Carnashannagh Stream are unlikely to be constrained from July to September. This assessment arises from the generally low fisheries significance and likely barrier to upstream passage caused by the culvert in the lower reaches of this stream.

Road Drainage

The provision of new road drainage at two locations: L-1881 Brae Road at Monreagh Park and the R239 road at junction of Fairview Manor and Burnfoot WwTP are identified that could contribute further to flood risk in Burnfoot. There is a lack of drainage infrastructure in this area and the existing downward-sloping topography of the Brae Road carriageway approaching Burnfoot presents a potential surface water issue. The new drainage solution will be connected to flows carrying pipes into fields, with headwalls discharging into purpose-created open swales. These swales are proposed at the toe of west side of the embankments and a small bank is incorporated at the opposite side, the top of which tying back into existing ground levels of the fields to complete formation of the channels. Overflowing of swales is unlikely due to relatively slow volumes of water being generated from road, however in the event of channels becoming overwhelmed, excess water will enter the Burnfoot River via overland flow in sloping fields. The falls within the fields negates the need for along section of buried pipework and swales could also tie in proposed back drainage of the relevant embankments in these locations. Stockproof fencing is additionally proposed to prevent entry of livestock to embankments and swales

The impact of road drainage at these location will be positive and will be long term/permanent as flood risk is reduced. Disruption to traffic during the construction of road drainage features is expected and will be only short term until works have been completed

Back Drainage

During embankment construction there is potential for sediment runoff as clay material is compacted around outfall pipework. The outlet pipework will be laid during embankment construction which will require careful compaction to precent the risk of sediment runoff. The outlet pipework will have a “collar” which will prevent flow path forming along this route. Additionally, accidental spills associated with machinery fuels and oils can contribute to contaminant release to surface drainage during laying of pipework in embankment construction. Back drainage is to be connected form the defended side of the embankment to the proposed swales and avoid the need for extra pipework.

These potential impacts will be addressed with mitigation measures such as detailed in the Construction Environmental Management Plan (CEMP), including an Emergency Response Plan (ERP) to address spillages/discharge of sediments and pollutants. The overall impact will be improved integrated drainage systems in along the road network and adjacent properties.

Therefore, the magnitude of the potential impact to Water from sediment release with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment

Therefore, the magnitude of the potential impact to Water from pollution with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment

14.6.4.1.4 Wastewater Treatment

Another potential impact is on the Burnfoot urban wastewater treatment facility located upstream of the bridge. In addition, there are wastewater treatment package plants adjacent to the Burnfoot River at Líos na Greíne on the left bank and at Monreagh Park Housing estate may discharge from here. Further investigations are ongoing to confirm this is required.

There is an Irish Water (IW) capital project planned to combine Burnfoot and Bridgend agglomerations into one WWTP at a new site in Burnfoot and to then relocate the primary discharge. These improvement works are noted in the 2020 Annual Environment Report (AER) but are funded under Regulatory Control Period (RC3), therefore the planned improvement works will be post 2024.

As outlined in Section 14.6.4.1.5, interactions between telecommunications infrastructure with stormwater and sewer pipes during bridge construction, may cause disruption for short time until water/sewer mains are relocated.

Impacts are expected to be short term and temporary. Mitigation is possible by timing work schedules appropriately and sharing information and the operator of the facility, Irish Water. This means that operation of the wastewater treatment facility and construction of the new sewerage network scheme is not affected by the Proposed Scheme.

Therefore, the magnitude of the potential impact to Wastewater Infrastructure from the disruption to operation of treatment plant with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment

14.6.4.1.5 Communications infrastructure and Utilities

There may also be an impact on broadband, electricity and telecommunication infrastructure during construction works, especially where excavation is required and the replacement of the existing road bridge across the Burnfoot River. Therefore, it is expected that impacts will be most pronounced during the construction of the new bridge crossing the main R238 road network where the services are concentrated.

There are a number of utilities that will be diverted to allow construction of the Proposed Scheme. All major utility diversions will be carried out in advance of construction works. This will involve relocating ESB electrical poles which crossing of stormwater and sewer pipes adjacent to Monreagh Park. The diverting of fibre optic telecommunications and water mains may result in disruption for a period until new bridge is constructed. Disruption may be experienced to Brae road drainage improvement at the junction with Monreagh Park will involve potential interaction with underground fibre-optic telecommunications and surface water sewer. Further disruption may occur with the potential interaction of water main and underground telecommunications at drainage improvement works on the R239 at the junction with Burnfoot WWTP and Fairview Manor. Knowledge of the location of important utilities will be important to reduce the risk of interaction between utilities and the Proposed Scheme.

Impacts are only expected to be temporary and short term. It is expected, with appropriate mitigation measures and a robust understanding of where cabling is located, that major impacts can be avoided.

Therefore, the magnitude of the potential impact to Energy and Communications Infrastructure from the disruption in diversion of cabling with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment

14.6.4.1.6 Road Network

Construction phase impacts on roads are possible through disruption of key roads in the area in the short term. Transport links to larger urban hubs are vital for community of Burnfoot. The town is service by the R238 regional road and several local roads. The R238 road bridge is a historic masonry structure that facilitates heavy traffic towards the western side of Inishowen including the town of Buncrana. The potential impact of the construction phase on the R238 road bridge is significant, considering that there are no suitable diversion routes available. Mitigation through the provision of a temporary bridge during replacement of the existing structure can be used to help reduce this impact. The provision of a temporary bridge will include two traffic lanes and a footway to facilitate traffic in both directions simultaneously. In addition, the route of the diverted R238 will likely mean that visibility for cars travelling along the L-1881 (Brae Road) will be restricted by the gable wall of the terrace properties that front onto the R238. Temporary traffic lights will be in place and reduced speed limit of 25 kph

for the temporary bridge and the approach roads. The duration of the temporary bridge is anticipated to be 4-6 months until the new bridge is completed.

The demolition and removal of the Burnfoot bridge to allow the new bridge construction may affect the Burnfoot river. Temporary support for the services including fibre optic cables and water main will be required and agreement will be sought from network providers before compete removal of the bridge. The removal of the bridge may result in the collapse of keystones and debris entering the river. Health and safety risk will be assessed in the contractor's method statement, in the design risk assessment and a full structural survey of the existing bridge will be undertaken prior to demolition. A crane will be required for the installation of precast components of the new bridge which will be located on a crane pad as close as possible to the existing bridge.

The impacts are expected to be short-term and temporary. The implementation of construction mitigation measures as outlined in Section 14.6.6.1 will reduce any impacts on the road network in Burnfoot.

Therefore, the magnitude of the potential impact to the Road Network Infrastructure from traffic disruption with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore minor with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment.

14.6.4.1.7 Waste Management

The generation of waste is expected post construction. There will be a requirement to handle, store, remove and dispose of waste material in accordance with the relevant waste management legislation. Waste material will be generated from on-site construction waste such as fuels, oils from machinery, cement, concrete, site clearance related waste, demolition waste and earthwork excavations.

The nature of waste will be vegetation, topsoil, subsoil, and stone. The material will be stored on-site and reused where possible. It is important that waste will be stored away from any watercourse. Waste material deemed unsuitable for re-use in the works will be disposed of accordingly under a waste permit or certificate of registration from the local authority.

Therefore, the magnitude of the potential impact to the waste management from disposal of unsuitable material with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore negligible/minor with the continued implementation of mitigation measures based on the low sensitivity of the receiving environment.

14.6.4.1.8 Other Projects in the Area

Another potential impact is on the Northwest Greenway Project. This is due to the proposed hard defences potentially being built close to the proposed greenway route. If the situation arises that both projects are being constructed at the same time impacts are expected to be temporary and short term. It will be important to communicate with Donegal County Council greenway team and ensure plans avoid any clashes with construction methods between the two projects. Indeed, there are proposals to integrate the two projects in areas where the greenway and flood embankments coincide.

Therefore, the magnitude of the potential impact to other projects in the area from overlap of project schedules with the continued implementation of best practice and the construction environmental management measures for the Proposed Scheme is considered to be low. The significance of the environmental effect is therefore negligible with the continued implementation of mitigation measures based on the low sensitivity of the receiving environment.

14.6.4.2 Assessment of Operational Effects

Impacts on material assets during the operation phase of the Proposed Scheme are likely to be limited and once construction has been completed.

There is one exception to be considered, the agricultural lands immediately downstream of Burnfoot bridge are to be opened up as flood zone during the operational phase of the Proposed Scheme.

14.6.4.2.1 Buildings and Structures

The overarching effect of the Proposed Scheme will be positive impact as flood risk is reduced for the community of Burnfoot therefore protecting buildings and structures form future flooding. This impacts will be long-term / permanent. Maintenance and cleaning of the components of the Proposed Scheme will be carried out which will require access to private property. This impact will be short term and temporary. Flood embankments will be mowed at least twice annually to prevent growth of significant vegetation. Inspection will be conducted of potential animal burrowing or damage from livestock through fencing of defences in agricultural lands. Culverts will be inspected regularly which will be particularly important prior to and post significant rainfall events. The removal of existing embankments and the reconnection of the floodplain will be reducing flooding downstream of Burnfoot. This will have significant positive impact as natural flood regime is restored.

Therefore, the magnitude of the potential impact to Buildings and Structures from reduced flood risk is considered to be high. The significance of the environmental effect is therefore major with the continued implementation of mitigation measures based on the high sensitivity of the receiving environment

14.6.4.2.2 EPA Licensed Facilities

No operational phase impacts are expected to any EPA licensed facilities.

14.6.4.2.3 Water

The overall impact for the operational phase will be positive in reducing risk of flooding on water infrastructure.

Therefore, the magnitude of the potential impact to Water infrastructure is considered to be high. The significance of the environmental effect is therefore major with the continued implementation of mitigation measures based on the high sensitivity of the receiving environment

14.6.4.2.4 Wastewater Treatment

There is potential for impact on the Burnfoot urban wastewater treatment facility and package plants associated with the housing estates located on both banks of the river. This wastewater treatment facility and associated infrastructure (e.g., pipes, pumping stations etc.) may be impacted as hard defences are proposed in the location of the WWTP and future Irish Water upgrades may utilise the bridge crossing for infrastructure. Impacts

could be long-term / permanent. However, impacts can be mitigated during the consultation and design phases, ensuring wastewater infrastructure can be effectively implemented when the Proposed Scheme is in operation. Ultimately, the Proposed Scheme will reduce the risk of flooding of wastewater infrastructure in Burnfoot which is positive and significant.

Therefore, the magnitude of the potential impact to Wastewater Treatment from reduced flood risk is considered to be high. The significance of the environmental effect is therefore major with the continued implementation of mitigation measures based on the high sensitivity of the receiving environment

14.6.4.2.5 Communications infrastructure and Utilities

No operations phase impacts are expected once the construction of the Proposed Scheme has been constructed.

14.6.4.2.6 Road Network

Post construction of the Proposed Scheme, all those using the road network in Burnfoot and the wider Inishowen community and visitors to the area will benefit from the new bridge and the end of traffic disruption. In addition the risk of flooding will be significantly reduced therefore protecting the road network.

Therefore, the magnitude of the potential impact to the Road Network from reduced flood risk is considered to be high. The significance of the environmental effect is therefore major with the continued implementation of mitigation measures based on the high sensitivity of the receiving environment

14.6.4.2.7 Waste Management

There is expected to be no waste generated during the operation of the Proposed Scheme.

14.6.4.2.8 Other Projects in the Area

Another potential impact is on the Northwest Greenway Project. This is because hard defences potentially being close to the proposed greenway route. Impacts could be long-term / permanent. However, impacts can be mitigated during the consultation and design phases, ensuring there are no issues with designs between the two projects. There may be an opportunity to enhance both projects with integrated designs in some areas.

Therefore, the magnitude of the potential impact to other projects in the area from the presence of hard defences close to greenway route is considered to be medium. The significance of the environmental effect is therefore moderate with the continued implementation of mitigation measures based on the medium sensitivity of the receiving environment.

14.6.5 Inter-relationships

Inter-relationships exist between Material Assets and Population and Human Health (Chapter 8) and Waste (Chapter 17).

14.6.6 Mitigation

14.6.6.1 Construction Mitigation Measures

Impacts on material assets during the construction phase of the Proposed Scheme have the potential to be significant without mitigation measures. Many of the impacts will only be short term and temporary and mitigation is technically feasible to reduce potential impacts. Measures will include:

- The installation of a temporary bridge prior to the removal of the existing bridge to ensure that traffic flow is not obstructed and remains continuous throughout the construction phase;
- Diverting of utilities prior to construction of the Proposed Scheme;
- Mitigation will be required to protect and integrate the existing service providers will be undertaken throughout the process;
- An invasive species management plan (ISMP) has been prepared for the Scheme and this will be implemented to prevent the spread of such species during construction;
- Before the works commence on-site, a site-specific pre-construction Site Waste Management Plan (SWMP) will also be prepared by the appointed contractor. The SWMP will be prepared in line with the waste management hierarchy, with waste reduction and re-use on site being primary focus. The SWMP will be appointed by the appointed contractor and implemented before construction works;
- A Construction Environmental Management Plan (CEMP) will be developed by the contractor form the outline CEMP that will be submitted as part of the approvals process. The CEMP will be designed to avoid, minimise, or mitigate adverse construction effects on the environment during construction of the Proposed Scheme, particularly pollution prevention measures necessary to protect the sensitive receiving environment and downstream European Sites. The CEMP will also develop a variety of measures that will be incorporated to mitigate against nuisance to population including provisions in relation to traffic, noise, and dust on the site.
- The contractor should prepare an Emergency Response (ERP) describing how instances of spillages/ discharge of sediment and other pollutants will be managed. The ERP should be included within the CEMP.
- Communication with Donegal County Council to avoid any clashes with construction methods between the Proposed Scheme and other projects in the area.

14.6.6.2 Operational Mitigation Measures

No mitigation measures are being recommended during the operation phase at this stage. The Proposed Scheme is designed to protect material assets from flooding during operation.

14.6.7 Monitoring

After the construction phase has been completed, the components of the Proposed Scheme such as the defence walls, culverts, flood embankments and drainage elements will be monitored and maintained by Donegal County Council.

14.7 Potential Cumulative Effects

Due to the interrelationships between material assets and wider technical disciplines, potential cumulative effects from other developments have already been considered and are not considered likely.

14.8 Residual Impacts

The proposed scheme will result in the introduction of new infrastructure and flood defence features that are designed to withstand flooding and to protect material assets in Burnfoot. There will be no residual impacts on material assets following construction of the Proposed Scheme.

14.9 Summary of Effects

The significance of the effects of the Proposed Scheme on material assets have been addressed, and a summary of the potential impacts and their significance is shown in Table 14.4.

This assessment has demonstrated that:

a. All sources of risk to material assets form the Proposed Scheme have been identified: and

b. There are adequate measures to manage and mitigate any increase in risk to material assets arising from the Proposed Scheme; and,

c. The overall effect of the Proposed Scheme is profoundly positive as material assets will be permanently protected against flood risk and the only negative is temporary disruption to traffic and to local residents and businesses.

Table 14.4: Summary of Potential Impacts and Effects

Receptor	Sensitivity of Receptor	Description of Effect	Duration	Magnitude	Significance	Significant or Not Significant
Buildings and Structures	Medium	Increase traffic and disruption	Short term	Low	Minor	Not significant
	Low	Demolition and relocation of property.	Permanent	High	Minor or moderate	Not significant
	High	Reduced flood risk	Permanent	High	Major	Significant
EPA Licensed Facilities	Medium	Heavy Machinery in area	Short term	Low	Minor	Not significant
Water	High	Reduced Flood Risk	Permanent	High	Major	Significant

Receptor	Sensitivity of Receptor	Description of Effect	Duration	Magnitude	Significance	Significant or Not Significant
	Medium	Sediment release	Short term	Low	Minor	Not significant
	Medium	Pollution	Short term	Low	Minor	Not significant
Wastewater Treatment	Medium	Disruption to operation of treatment plant	Short term	Low	Minor	Not significant
	Medium	Reduced flood risk	Permanent	High	Major	Significant
Communications Infrastructure and Utilities	Medium	Disruption in diversion of cabling	Short term	Low	Minor	Not significant
	High	Reduced Flood Risk	Permanent	High	Major	Significant
Road Network	Medium	Disruption to traffic	Short term	Low	Minor	Not significant
	High	Reduced Flood Risk	Permanent	High	Major	Significant
Waste Management	Low	Disposal of unsuitable material	Short term	Low	Negligible or minor	Not significant
Other Projects in the Area	Low	Overlap of schedules	Short term	Negligible	Negligible	Not significant
	Medium	Hard defences close to greenway route	Permanent	Medium	Moderate	Not significant

14.10 Limitations of Assessment

There are no limitations that would affect the robustness of the assessment for EIAR purposes.