



Chapter 21

Summary of Mitigation & Monitoring Measures

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21 Summary of Mitigation & Monitoring Measures

21.1 Introduction

The purpose of this Chapter is to collate the mitigation and monitoring measures identified in the Environmental Impact Assessment Report (EIAR) that are considered necessary to protect the environment, prior to the commencement of, and throughout the duration of the Construction and / or Operational Phases of the BusConnects Galway: Cross-City Link (University Road to Dublin Road) (hereafter referred to as the Proposed Scheme).

The design of the Proposed Scheme has evolved through comprehensive design iteration, with particular emphasis on minimising the potential for environmental impacts, where practicable, whilst ensuring the objectives of the Proposed Scheme are attained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development process have been incorporated, where appropriate.

As described throughout this EIAR, the design of the Proposed Scheme has been progressed taking account of environmental constraints and considerations that have been identified in assessments. This has enabled the avoidance of potential environmental impacts, wherever possible.

21.2 Mitigation and Monitoring Schedules

Mitigation and monitoring measures have been identified as environmental commitments and overarching requirements which shall avoid, reduce or offset potential impacts.

Mitigation and monitoring measures specified within the EIAR technical assessments are also provided in Chapter 6 to Chapter 20 of this EIAR.

The timing and implementation of the mitigation and monitoring measures are indicated within this Chapter as either the:

- Construction Phase: The undertaking of physical works to construct elements of the Proposed Scheme, as outlined in Chapter 4 (Proposed Scheme Description) of this EIAR; and
- Operational Phase: When the Proposed Scheme comes into operation, (including any mitigation associated with planned maintenance).

The following tables summarise the Construction and Operational phase mitigation outlined in the relevant EIAR technical assessments but should be read in conjunction with the mitigation outlined in the specific chapter and also with the Construction Environmental Management Plan (CEMP) in Volume 4 of this EIAR (note that the CEMP summarises the Construction Phase mitigation only).

Where appropriate the location to which the mitigation relates to is identified and where the mitigation measure is scheme wide the location is given as ‘throughout (as required)’. Note that in certain instances, a mitigation measure may be relevant to more than one environmental aspect (e.g., Mitigation Number WT2 is also a mitigation measure relevant to Biodiversity).

Where possible, environmental monitoring data will be made publicly available.

21.3 General Mitigation Requirements

Table 21.1: General Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
GEN1	Section 5.10	Throughout (as required)	The mitigation and monitoring measures appropriate to the construction contract summarised in this chapter have been included in the Construction Environmental Management Plan (CEMP) and its associated management plans (provided in Appendix 5.1 in Volume 4 of this EIAR).	Construction

21.4 Traffic & Transport

Table 21.2: Traffic and Transport Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
TT1	6.6	Throughout (as required)	<p>A Construction Environmental Management Plan (CEMP) has been prepared (included as Appendix 5.1 in Volume 4 of this EIAR) and will be implemented (and developed further as required) by the appointed contractor.</p> <p>A detailed Construction Traffic Management Plan has been prepared and will subsequently be updated by the contractor prior to construction, including Temporary Traffic Management arrangement prepared in accordance with Department of Transport's 'Traffic Signs Manual, Chapter 8 Temporary Traffic Measures and Signs for Roadworks'. The plan will be agreed with GCC and will include measures to minimise the impacts associated with the Construction Phase upon the peak periods of the day.</p>	Construction

21.5 Air Quality

Table 21.3: Air Quality Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
AQ1	7.5.1	Construction Compound and (as required)	<p>A series of mitigation measures will be implemented by the appointed contractor to reduce the dust nuisance impacts:</p> <ul style="list-style-type: none"> Fully enclose structures with screens during demolition to minimise dust dispersion; Public roads outside the Proposed Scheme will be regularly inspected for cleanliness and cleaned as necessary; Material handling systems and stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays (or similar dust suppression methods) will be used as required if particularly dusty activities associated with the construction contract are necessary during dry or windy periods; During movement of dust generating materials both on and off-site, trucks will be covered with tarpaulin and before entrance onto public roads, trucks will be checked to ensure the tarpaulins are properly in place; The appointed contractor will provide a site hoarding of 2.4m height along boundaries where works are taking place adjacent to ecological sensitive receptors (Lough Atalia and Lough Corrib) and at the Harbour Construction Compounds, which will assist in minimising the potential for dust impacts off-site. <p>The appointed contractor will keep the effectiveness of the mitigation measures under review and revise them as necessary. In the event of dust nuisance occurring outside the works boundary associated with the Proposed Scheme occurring outside the works boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem.</p>	Construction
AQ2	7.5.1.2	Throughout (as required)	The following monitoring measures, will be implemented for the construction phase of the proposed development:	

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> The contractor will undertake on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to Galway City Council on request. The frequency of the inspections will be increased during site activities with a high potential to produce dust are being carried out. Dust monitoring will be undertaken at the three nearest sensitive receptors (with agreement from the landowner) to the works during the construction phase. The TA Luft dust deposition limit values of 350 mg/m²/day applied as a 30-day average. The monitoring measures are included in the Construction Environmental Management Plan (CEMP) (Appendix 5.1 of Volume 4 of this EIAR). 	

21.6 Climate

Table 21.4: Climate Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
CL1	8.6.1	Throughout (as required)	<p>A series of mitigation measures have been incorporated into the Proposed Scheme with the goal of reducing the embodied carbon associated with the Construction Phase. These mitigation measures include:</p> <ul style="list-style-type: none"> The replacement, where feasible, of concrete containing Portland cement with concrete containing ground granulated blast furnace slag (GGBS); The Proposed Scheme will minimise wastage of materials due to poor timing or over ordering on site thus helping to minimise the embodied carbon footprint of the Proposed Scheme; 	Construction

			<ul style="list-style-type: none"> Where practicable, opportunities for materials reuse will be incorporated within the extent of the Proposed Scheme including the use of reclaimed asphalt and recycled aggregate; and Where practicable, materials will be sourced locally to reduce the embodied emissions associated with transport. 	
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21.7 Noise & Vibration

Table 21.5: Noise and Vibration Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
NV1	9.5.1.1	Throughout (as required)	<p>The appointed contractor will be required to take specific noise abatement measures to the extent required and comply with the recommendations of BS 5228–1 (BSI 2014a) and European Communities Noise Emissions by Equipment for Use Outdoors (Amendment) Regulations 2006 (S.I. No 241/2006). The mitigation measures outlined below for the Construction Phase have also been included in the Construction and Environmental Management Plan (Appendix 5.1 in Volume 4 of this EIAR).</p> <p>These measures will ensure that:</p> <ul style="list-style-type: none"> During the Construction Phase, the appointed contractor will be required to manage the works to comply with the limits detailed in Section 9.2.4.1 in Chapter 9 (Noise and Vibration) of this EIAR using methods outlined in BS 5228–1 (BSI 2014a); The best means practicable, including proper maintenance of plant and equipment, will be employed to minimise the noise produced by on site operations. 	Construction
NV2	9.5.1.1	Throughout (as required)	<p>The appointed contractor will put in place the most appropriate noise control measures depending on the level of noise reduction required at individual working areas i.e., based on the construction threshold values for noise and vibration set out in Table 9.5 and Table 9.8 in Chapter 9 of this EIAR. Reference to Table 9.25 in Chapter 9 of this EIAR indicates that intrusive works occurring within 70 m of NSLs will need specific noise control measures to reduce impacts depending on time period over which they will occur, i.e. daytime or evening.</p>	Construction
NV3	9.5.1.1	Throughout (as required)	<p>The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable. Should a particular item of plant already on the site be found to generate unexpectedly high noise levels, the first action will be to identify whether or not the item can be replaced with a quieter alternative. For static plant such as compressors and generators used at work</p>	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<p>areas such as Construction Compounds etc., the units will be supplied with manufacturers' proprietary acoustic enclosures where practicable.</p> <p>The contractor will evaluate the choice of excavation, breaking or other working method taking into account various ground conditions and site constraints. Where possible, where alternative lower noise generating equipment are available that will provide structural / excavation / breaking results, these will be selected to minimise potential disturbance.</p>	
NV4	9.5.1.1	Construction Compound and throughout (as required)	<p>The following measures will be implemented by the appointed contractor to control noise levels at source in order to remain below the threshold values for noise set out in Table 9.5 in Chapter 9 (Noise and Vibration) of this EIAR, which relate to specific site considerations:</p> <ul style="list-style-type: none"> For mobile plant items such as dump trucks, planers, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB; For percussive tools such as pneumatic concrete breakers and tools a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed; Construction Compounds are located in close proximity to NSLs (refer to Table 9.24 in Chapter 9 (Noise and Vibration of this EIAR) and will therefore incorporate a strict noise control policy relating to materials handling. Noisy items of plant will be sited away from noise sensitive boundaries. Where compressors, generators and pumps are located in proximity to NSLs and have potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; and Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact. 	Construction
NV5	9.5.1.1	Throughout (as required)	Erection of localised demountable enclosures or screens will be used around breakers or drill bits, as required, when in operation in proximity to NSLs boundaries with the potential to exceed the construction noise thresholds. Annex B of BS 5228-1 (BSI 2014a) (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on site from standard materials.	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
NV6	9.5.1.1	Construction Compound	The appointed contractor will provide a site hoarding of 2.4m height along noise sensitive boundaries, at a minimum, at the Construction Compounds.	Construction
NV7	9.5.1.1	Construction Compound	Careful planning of the Construction Compounds including the placement of site buildings such as offices and stores between the site and noise sensitive locations will also be considered by the appointed contractor.	Construction
NV8	9.5.1.1	Throughout (as required)	It is generally envisaged that construction working hours will be between 07:00hrs and 19:00hrs on weekdays. Night-time, Saturday and Sunday working will be required during certain periods in order to minimise the impact on road traffic movement during the daytime. The planning of such works will take consideration of sensitive receptors, in particular any nearby residential areas.	Construction
NV9	9.5.1.1	Throughout (as required)	Construction activities will be scheduled in a manner that reflects the location of the site and the nature of neighbouring properties. Construction activities / plant items will be considered with respect to their potential to exceed construction noise thresholds at NSLs and will be scheduled according to their noise level, proximity to sensitive locations and possible options for noise control. In situations where an activity with potential for exceedance of construction noise thresholds is scheduled (e.g. road widening and utility diversions or activities with similar noise levels identified in Table 9.25 in Chapter 9 (Noise & Vibration) of this EIAR) other construction activities will be scheduled to not result in significant cumulative noise levels.	Construction
NV10	9.5.1.1	Throughout (as required)	GCC will establish clear forms of communication that will involve the appointed contractor and NSLs in proximity to the works so that residents or building occupants are aware of the likely duration of activities likely to generate noise or vibration that are potentially significant as set out in Table 9.5 and Table 9.8 in Chapter 9 (Noise & Vibration) of this EIAR.	Construction
NV11	9.5.1.1	Throughout (as required)	During the Construction Phase noise monitoring will be undertaken at representative NSLs to evaluate and inform the requirement and/ or implementation of noise management measures. Noise monitoring will be conducted in accordance with ISO 1996–1 (ISO 2016) and ISO 1996–2 (ISO 2017). The selection of monitoring locations will be based on the nearest representative NSLs to the working area which will progress along the length of the Proposed Scheme.	Construction
NV12	9.5.1.2	Throughout (as required)	In the case of vibration levels giving rise to human discomfort, to minimise such impacts the appointed contractor will implement the following mitigation measures during the Construction Phase: <ul style="list-style-type: none"> A clear communication programme will be established by GCC to inform adjacent building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to result in significant effects as per Table 9.9 in Chapter 9 (Noise & Vibration) EIAR; 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> Activities capable of generating significant vibration effects with respect to human response (as per Table 9.9 in Chapter 9 (Noise & Vibration) of this EIAR) will be restricted to daytime hours only, as far as practicable; and Appropriate vibration isolation shall be applied to plant (such as resilient mounts to pumps and generators), where required and where feasible. 	

21.8 Population

Table 21.6: Population Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
P1	n/a	n/a	No additional mitigation or monitoring measures are considered necessary beyond those already identified in other environmental assessments	n/a

21.9 Human Health

Table 21.7: Human Health Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
HH1	11.5	Throughout (as required)	Any mitigation or monitoring requirements in relation to effects on human health are properly addressed by the measures set out in the chapters which assess effects on the vectors through which the scheme has potential to cause likely and significant effects on human health.	Construction

21.10 Biodiversity

Table 21.8: Biodiversity Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
BD1	12.6.1	Throughout (as required)	The Contractor will be required to enforce the CEMP which will include the following construction management measures. An Ecological Clerk of Works (EcOW) will be employed to maintain a watching brief on the proposed mitigation measures included for the protection of European sites.	Construction
BD2	12.6.1.1	Throughout (as required)	<p><u>Environmental Incident Response Plan</u></p> <p>In the event of an environmental emergency, all personnel will react quickly and adhere to the Environmental Incident Response Plan procedure, refer to Section 5.6 of the CEMP included in Appendix 5.1 of Volume 4 of this EIAR (to be updated by the Contractor). The following outlines the information on the types of emergency which must be communicated to site staff:</p> <ul style="list-style-type: none"> • Release of hazardous substance – fuel or oil spill. • Concrete spill or release of concrete. • Flood event – extreme rainfall or rising river level event. • Environmental buffers and exclusion zones breach. • Housekeeping of materials and waste storage areas breach. • Stop work orders due to environmental issue or concern (e.g. threat to ecological feature). 	Construction
BD3	12.6.1.2	Throughout (as required)	<p><u>Invasive Species Management Plan</u></p> <p>Refer to the CEMP (Appendix 5.1 of Volume 4 this EIAR) for full details on the management of the potential for invasive species.</p>	Construction
BD4	12.6.1.3	Throughout (as required)	<u>Habitats & Flora</u>	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			In general, with regard to biodiversity any felling of trees will take place outside the Bird nesting season March 1 st to August 31 st .	
BD5	12.6.1.4	Construction Compounds and throughout (as required)	<p><u>Habitat Degradation – Surface Water Quality</u></p> <p>The CEMP includes specific management measures for the prevention of the pollution of water courses from dust, suspended solids or chemicals.</p> <p>These measures accord with the principles set out in industry guidelines including CIRIA’s report ‘C532: Control of water pollution from construction sites’.</p> <p>The following mitigation measures will be employed:</p> <p>River Corrib at Salmon Weir Bridge</p> <ul style="list-style-type: none"> As a precaution, the control of dust emissions will be enforced by providing a suitable barrier to prevent dust entering the River Corrib at the Salmon Weir Bridge for the length of the Scheme required to prevent emissions to Persse’s Distillery river, the main channel of the river and Friar’s River at Newtownsmith from the proposed disturbance area. The barrier will be inspected on a weekly basis for gaps or displacement and reinstated when required. A record of inspection and efficacy of the barrier will be noted in the printed version of the CEMP as an inspection sheet. The record of inspections will be maintained on site and will be available upon request by relevant authorities. Details of the dust minimisation measures are included in a Construction and Demolition Resource and Waste Management Plan, as described in the CEMP. <p>University Road at Ward’s Shop</p> <ul style="list-style-type: none"> The control of surface water discharge will be enforced by providing a suitable barrier to prevent surface water entering the Eglinton Canal at gaps in the boundary wall leading to the canal and for the length of canal required to prevent drainage to the canal from the proposed disturbance area. The barrier will comprise a silt fence placed 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<p>with sand bags or a suitable supporting frame. The silt fence will be inspected on a weekly basis for gaps or displacement and reinstated when required.</p> <ul style="list-style-type: none"> A record of inspection and efficacy of the barrier will be noted in the printed version of the CEMP as an inspection sheet. The record of inspections will be maintained on site and will be available upon request by relevant authorities. <p>Lough Atalia Playground Outfall</p> <ul style="list-style-type: none"> The works at Lough Atalia Playground will avoid potential disturbance to wintering birds by undertaking the works outside the Winter bird period October to March. The works at Lough Atalia Playground will be timed to avoid ‘spring’ high water times and inclement weather (southerly/south-westerly winds) in order to avoid washing of surface water to the sea. Tide times are available from several websites. The delay time for the ebb and flow time to Lough Atalia will be determined by the Contractor or representative Resident Engineer. The control of surface water discharge will be enforced by firstly providing a temporary sandbag dam at the headwall of the proposed outfall prior to work commencing in this area at low tide. The temporary dam will comprise 1 tonne bags (or similar suitable size) placed at low tide at the foot of the rock armour berm in this area. A silt fence or suitable geotextile barrier will be placed inside the dam and secured using smaller sandbags as required to form an impermeable barrier to prevent hydrocarbon and contaminated surface water runoff to Lough Atalia. The control of surface water discharge will be enforced by providing a suitable barrier to prevent surface water entering Lough Atalia in the proposed trench leading to the outfall. The barrier will comprise a silt fence placed with sand bags or a suitable supporting frame. A typical silt fence consists of a piece of synthetic filter fabric (also called a geotextile) stretched between a series of wooden or metal fence stakes along a horizontal contour level, (see Diagram 12.12 in Chapter 12 (Biodiversity) of the EIAR) for sample details. The stakes will be installed on the downhill side of the fence, and the bottom edge of the fabric will be trenched into the soil and backfilled on the uphill side. The fence will be installed on a site before soil disturbance begins and is placed down-slope from the disturbance area. The design/placement of the silt fence will create a pooling of runoff, which then allows sedimentation to occur. The silt fence fabric becomes "blocked off" with fine soil particles and clean water can seep through the fabric. The silt fence will be inspected on a weekly basis for gaps or displacement and reinstated when required. 	

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> A record of inspection and efficacy will be noted in the printed version of the CEMP as an inspection sheet. The record of inspections will be maintained on site and will be available upon request by relevant authorities. <p>Lough Atalia adjacent to the Dublin Road</p> <ul style="list-style-type: none"> The works at the Lough Atalia Dublin Road area will be timed to avoid ‘spring’ high water times and inclement weather (southerly/south-westerly winds) in order to avoid washing of surface water to the sea. Tide times are available from several websites. The delay time for the ebb and flow time to Lough Atalia will be determined by the Contractor or representative Resident Engineer. The control of surface water discharge will be enforced by providing a suitable barrier to prevent surface water entering Lough Atalia. The barrier will comprise a silt fence placed with sand bags or a suitable supporting frame such as a staked fence. A typical silt fence consists of a piece of synthetic filter fabric (also called a geotextile) stretched between a series of wooden or metal fence stakes along a horizontal contour level, (see Diagram 12.12 in Chapter 12 (Biodiversity) of the EIAR) for sample details. The stakes will be installed on the downhill side of the fence, and the bottom edge of the fabric can be trenched into the soil and backfilled on the uphill side. The fence will be installed on a site before soil disturbance begins and is placed down-slope from the disturbance area. The design/placement of the silt fence should create a pooling of runoff, which then allows sedimentation to occur. The silt fence fabric becomes "blocked off" with fine soil particles and clean water can seep through the fabric. The silt fence will be inspected on a weekly basis for gaps or displacement and reinstated when required. A record of inspection and efficacy will be noted in the printed version of the CEMP as an inspection sheet. The record of inspections will be maintained on site and will be available upon request by relevant authorities. <p>All Working Areas adjacent to water courses/water bodies</p> <ul style="list-style-type: none"> Tools and equipment will not be cleaned in grassland or aquatic areas. Chemicals used will be stored in sealed containers. Chemicals shall be applied in such a way as to avoid any spillage or leakage. 	

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and away from grassland as far as reasonably practicable. Vehicles will not be left unattended during refuelling. All plant shall be well maintained with any fuel or oil drips attended to on an ongoing basis. Any minor spillage during this process will be cleaned up immediately. Best practice in bulk-liquid concrete management addressing pouring and handling, secure shuttering / form-work, adequate curing times will be implemented. Wash water from cleaning ready mix concrete lorries and mixers may be contaminated with cement and is therefore highly alkaline, therefore, washing will not be permitted on site. Disposal of raw or uncured waste concrete will be controlled to ensure that the aquatic environment will not be impacted. <p>For the management of excavation and spoil, the Contractor will:</p> <ul style="list-style-type: none"> Ensure all spoil and excavated materials will be stored in the construction compound or removed to an appropriate waste facility; Ensure stockpiles and adjacent features of drainage infrastructure will be monitored and maintained appropriately; Erect all protective fencing; Implement the Surface Water Management Plan (including the installation of drainage infrastructure) as detailed in the CEMP (Appendix 5.1 in Volume 4 of this EIAR) prior to excavation and include areas dedicated to spoil storage with the drainage infrastructure; and The Construction and Demolition Resource and Waste Management Plan, as described in the CEMP (Appendix 5.1 in Volume 4 of this EIAR) identifies any material such as dust, sand, rubble, concrete that may be generated during demolition works and address its storage and appropriate removal from the site to avoid pathways identified as having connectivity with the River Corrib. <p>Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same. A record of this training will be maintained.</p>	

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			The Construction Environmental Management Plan will be read and signed by the Contractor/Site Foreman and made available to the EcOW.	
BD6	12.6.1.5	Throughout (as required)	<p><u>Otters</u></p> <p>A worst-case scenario may be considered where a pollution event would indirectly affect otters or food availability to otters. The Construction Environmental Management Plan (refer to Appendix 5.1 of Volume 4 of this EIAR) which includes specific management measures for the prevention of the pollution of water courses from suspended solids or chemicals.</p>	Construction
BD7	12.6.1.5	Throughout (as required)	<p><u>Bats</u></p> <p>Ground level potential roost feature surveys conducted on trees within the study did not reveal any roosting bats. There are no further requirements for mitigation for bats.</p> <p>The roofs of buildings at the Headford Road and St. Brendan's Avenue are relatively recently upgraded and well-sealed with limited access for bats. However, as a precaution, an internal inspection of the attic spaces will be undertaken at an appropriate time prior to demolition in order to rule out the presence of bats. If any are recorded, specific mitigation measures which may require a derogation licence from the NPWS will be implemented.</p>	Construction
BD8	12.6.1.5	Throughout (as required)	<p><u>Seals</u></p> <p>A worst-case scenario may be considered where a pollution event would indirectly affect otters of food availability to seals. The Construction Environmental Management Plan (refer to Appendix 5.1 of Volume 4 of this EIAR) includes specific management measures for the prevention of the pollution of water courses from suspended solids or chemicals.</p>	Construction
BD9	12.6.1.5	Throughout (as required)	<p><u>Salmonids</u></p> <p>A worst-case scenario may be considered where a pollution event would affect water quality and threaten salmonids. The Construction Environmental Management Plan (refer to Appendix 5.1 of Volume 4 of this EIAR) includes specific management measures for the prevention of the pollution of water courses from suspended solids or chemicals.</p>	Construction
BD10	12.6.1.5	Throughout (as required)	<p><u>Lamprey</u></p>	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			A worst-case scenario may be considered where a pollution event would indirectly affect lampreys. The Construction Environmental Management Plan (refer to Appendix 5.1 of Volume 4 of this EIAR) includes specific management measures for the prevention of the pollution of water courses from suspended solids or chemicals.	
BD11	12.6.1.5	Lough Atalia Playground	<p><u>Birds</u></p> <p><u>Disturbance / Displacement</u></p> <p>Any felling, clearing or pruning of vegetation will take place outside the Bird nesting season March 1st to August 31st.</p> <p>The proposed works at the outfall at Lough Atalia Playground have the potential to disturb wintering birds in these areas. Potential impacts will be avoided by undertaking the works at Lough Atalia Playground outside the Winter bird period October to March.</p>	Construction
BD12	12.6.2	Throughout (as required)	<p><u>Aquatic Environment</u></p> <p>The Proposed Scheme will incorporate SuDS features in order to improve water quality and reduce the quantity of surface water discharging into the receiving system.</p>	Operational
BD13	12.6.3.1	Throughout (as required)	<p>An initial site environmental induction and ongoing training will be provided to communicate the main provisions of this environmental plan to all site personnel.</p> <p>Two-way communication will be encouraged to promote a culture of environmental protection.</p> <p>The following outlines the information which must be communicated to site staff:</p> <ul style="list-style-type: none"> • Environmental procedures of the CEMP. • Environmental buffers and exclusion zones. • Housekeeping of materials and waste storage areas. • Environmental emergency response plan. 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<p>Prior to any works, all personnel will receive an on-site induction relating to operations adjacent to watercourses and the environmentally sensitive nature of the River Corrib and to re-emphasise the precautions that are required as well as the construction management measures to be implemented.</p> <p>Galway City Council will also ensure that the engineer setting out the works is fully aware of the ecological constraints and construction management requirements.</p>	

21.11 Water

Table 21.9: Water Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
WT1	13.5	Throughout as required	Construction works will take place in accordance with the Construction Environmental Management Plan (CEMP) which will be developed by the appointed contractor (an Outline CEMP is included in Appendix 5.1 in Volume 4 of the EIAR). The outline Surface Water Management Plan (SWMP), which will form part of the CEMP sets out the mitigation and monitoring measures that are in place to minimise pollution discharge into local water courses.	Construction
WT2	13.5.1	Throughout (as required)	<p>The mitigation measures proposed for management of surface runoff are generally contained in good practice guidance documents that should be adhered to during the construction over or near water bodies. Some of the relevant guidance documents include:</p> <ul style="list-style-type: none"> Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters - Inland Fisheries Ireland, 2016; CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors; and CIRIA C648 Control of Water Pollution from Constructional Sites 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<p>Following on from the above guidelines, the following general and specific mitigation measures are outlined:</p> <ul style="list-style-type: none"> • Appropriate timing of the works to avoid flooding seasons and water pollution incidents; • A site boundary fence will be constructed around the construction footprint with adequate vegetation buffer to prevent unintentional discharge to adjacent watercourses; • A silt fence will be used during construction at the outfall at Lough Atalia where a sediment laden runoff is likely to be generated; • While working near water bodies (Corrib River and Lough Atalia), it is required to capture and treat all surface runoff before discharging to these water bodies; • Sampling and monitoring of storm water discharges from construction sites, the need, location, and frequency as determined by the Environmental Clerk of Works (ECoW). Parameters of interest may include Turbidity (or TSS), pH, and hydrocarbons. <p>A SWMP is provided as part of the CEMP. The CEMP includes a list of control measures to be implemented during the Construction Phase:</p> <ul style="list-style-type: none"> • A requirement for an Emergency Incident Response Plan (EIRP); • Construction Compound management including the storage of fuels and materials; • Control of sediment generation and discharge; • Provision of SUDs (attenuation pond and petrol interceptor) before discharge to the receiving waters; • Use of pre cast concrete where possible or construction method to be approved by the ECoW; and • Management of vehicles and plant including refuelling and wheel wash facilities – spills and discharge are contained and prevented from entering the surface water receptor. 	
WT3	13.5.1	Throughout (as required)	As outlined in the SWMP, the Appointed Contractor shall carry out visual monitoring of surface water control measures (settlement tanks, silt fences, fuel storage areas etc.) on a daily basis. In addition, weekly visual	

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			inspections of the water bodies in proximity to Proposed Scheme will be carried out by the Appointed Contractor. Refer to the CEMP for further information.	
WT4	13.5.2	Throughout (as required)	In the Operational Phase the infrastructure including the maintenance regime for SuDS (Swales and Raingardens) will be maintained by the local authority and will be subject to their management procedures.	Operational

21.12 Land, Soils, Geology & Hydrogeology

Table 21.10: Land, Soils, Geology and Hydrogeology Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
LSGH1	14.5.1.1	Throughout (as required)	<u>Loss or Damage of Topsoil</u> The appointed contractor will ensure that excavations shall be kept to a minimum, using shoring or trench boxes where appropriate. For more extensive excavations, a temporary works designer shall be appointed by the appointed contractor to design excavation support measures in accordance with all relevant guidelines that minimises the excavation of contaminated ground.	Construction
LSGH2	14.5.1.1	Throughout (as required)	<u>Loss or Damage of Topsoil</u> The appointed contractor will be responsible for regular testing of excavated soils to monitor the suitability of the soil for reuse.	Construction
LSGH3	14.5.1.1	Throughout (as required)	<u>Loss or Damage of Topsoil</u> Samples of ground suspected of contamination will be tested for contamination by the appointed contractor during the ground investigation and ground excavated from these areas will be disposed of to a suitably licensed or permitted site in accordance with the current Irish waste management legislation.	Construction
LSGH4	14.5.1.1	Throughout (as required)	<u>Loss or Damage of Topsoil</u> Any dewatering in areas of contaminated ground will be designed by the appointed contractor to minimise the mobilisation of contaminants into the surrounding environment.	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
LSGH5	14.5.1.2	Throughout (as required)	<p><u>Pollution of Soil and Groundwater</u></p> <p>Good construction management practices, as outlined in the CIRIA guidance, Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams <i>et al.</i>, 2001), will be employed by the appointed contractor to minimise the risk of transmission of hazardous materials as well as pollution of adjacent watercourses and groundwater.</p>	Construction
LSGH6	14.5.1.2	Throughout (as required)	<p><u>Pollution of Soil and Groundwater</u></p> <p>The construction management of the site by the appointed contractor will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams <i>et al.</i>, 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.</p>	
LSGH7	14.5.1.2	Construction Compounds and throughout (as required)	<p><u>Pollution of Soil and Groundwater</u></p> <p>Measures to be implemented by the appointed contractor to minimise the risk of spills and contamination of soils and waters include:</p> <ul style="list-style-type: none"> • Employing only competent and experienced workforce, and site-specific training of site managers, foremen and workforce, including all sub-contractors, in pollution risks and preventative measures; • Ensure that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g. by a roll-over bund, raised kerb, ramps or stepped access; • The location of any fuel storage facilities shall be considered in the design of the Construction Compounds. These are to be designed in accordance with relevant guidelines and codes of best practice and will be fully bunded; • Good housekeeping at the site (daily site clean-ups, use of disposal bins, etc.) during the entire Construction Phase; • All concrete mixing and batching activities will be located in areas away from watercourse and drains; • Potential pollutants to be adequately secured against vandalism; • Provision of proper containment of potential pollutants according to codes of best practice; • Thorough control during the entire Construction Phase to ensure that any spillage is identified at early stage and subsequently effectively contained and managed; and 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> Spill kits will be provided and kept close to the storage area. Staff to be trained on how to use spill kits correctly. 	
LSGH8	14.5.1.2	Throughout (as required)	An Environmental Incident Response Plan will be implemented by the appointed contractor, which will identify the actions to be taken in the event of a pollution incident. It will address such aspects as containment measures, emergency discharge routes, a list of appropriate equipment and clean-up materials and notification procedures to inform the relevant environmental protection authority. Refer to Appendix 5.1 CEMP in Volume 4 of this EIAR.	Construction
LSGH9	14.5.1.2	Throughout (as required)	Sediment control methods are outlined in the Surface Water Management Plan within the CEMP (Appendix 5.1 in Volume 4 of this EIAR) and these will be implemented by the appointed contractor.	Construction
LSGH10	14.5.1.4	Lough Atalia	<p><u>Pollution of Soil and Groundwater</u></p> <p>As detailed in the Land Contamination Remedial Strategy (Appendix 14.5 of Volume 4) a risk assessment shall be carried out to establish a concentration of cadmium in the soil that does not present a risk to the quality of water entering Lough Atalia.</p> <p>Soil, groundwater and surface water verification testing shall be carried out by the contractor during the construction stage to confirm the findings of the risk assessment.</p>	Construction

21.13 Archaeological Cultural Heritage & Architectural Heritage

Table 21.11: Archaeological Cultural Heritage & Architectural Heritage

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
ACHAH1	n/a	Throughout (as required)	GCC will procure the services of a suitably-qualified archaeologist as part of its Employer's Representative team administering and monitoring the works.	Construction
ACHAH2	15.6.1.1	Throughout (as required)	<p>Works impacting the sites of the National Monument, comprising Galway Town Defences (AH13/BH75), will require Ministerial Consent.</p> <p>A wade survey and underwater archaeological assessment of the area surrounding the new outfall towards the northern end of Lough Atalia will be carried out by a suitably qualified archaeologist under licence to the DoHLGH. If any features of archaeological potential are identified by the survey and assessment further archaeological mitigation may be required, such as preservation in-situ or by record.</p> <p>All ground disturbances associated with the Proposed Scheme will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.</p>	Construction
ACHAH3	15.6.1.2	Throughout (as required)	<p>Works impacting the National Monument comprising Galway Town Defences (AH13/BH75) will require Ministerial Consent.</p> <p>All statues/historic street furniture (BH44, BH52, BH67) and works along historic bridges, which fall within the Proposed Scheme area will require hoarding during construction to protect from potential damage during ground disturbances. If hoarding in-situ is not possible, the statues/street furniture will require careful removal by a conservation specialist to be stored securely and re-installed at an appropriate location, in consultation with the Galway Heritage Officer.</p>	Construction
ACHAH4	15.6.1.2	Throughout (as required)	Grave monument BH65 falls wholly within the Proposed Scheme area and will require hoarding to prevent damage during groundworks.	Construction
ACHAH5	15.6.1.2	Throughout (as required)	BH47 (Ceannt Station – a short section of retaining wall). To be subject to a full written and measured survey prior to construction going ahead.	Construction

ACHAH6	15.6.1.3	Throughout (as required)	Where cultural heritage sites such as statues/historic street furniture (CH03, CH04, CH05) fall within the Proposed Scheme area they will require hoarding during works to protect from potential damage during ground disturbances. If hoarding in-situ is not possible, the items will require careful removal by a conservation specialist to be stored securely and re-installed at an appropriate location, in consultation with the Galway Heritage Officer.	Construction
ACHAH7	15.6.1.3	Throughout (as required)	<p>A cobbled road surface to the front of Town Hall Theatre and historic paving/kerbing and bollards along St Vincents Street/Waterside/Courthouse Square (CH11) fall within the Proposed Scheme area. These features will be recorded and photographed before being lifted under supervision of a suitably qualified conservation specialist, for secure storage and re-use (where appropriate), in consultation with the Galway Heritage Officer.</p> <p>A full written and photographic record will be made of Eyre Square (CH10) and its current character and landscape layout. This will be carried out by a suitably qualified professional.</p> <p>Lough Atlia dock walls (CH12) will be hoarded off during construction and all excavation works to the rear of the wall supervised by an archaeologist. The methodology for repair of the dock wall will be agreed in advance with Galway Heritage Officer.</p>	Construction
ACHAH8	15.6.2.1	Throughout (as required)	A full written and photographic record will be made of AH16 and its current character and landscape layout. This will be carried out by a suitably qualified professional.	Operational

21.14 Landscape (Townscape) & Visual

Table 21.12: Landscape (Townscape) and Visual Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
LV1	16.5.1.1	Throughout (as required)	Prior to the commencement of works, the appointed contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The purpose of the CEMP is to ensure good working practices are implemented on site, including the mitigation measures set out in this chapter, thereby minimising and managing any potential negative environmental effects.	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
LV2	16.5.1.1	Throughout (as required)	<p>In addition to the management of all construction works in accordance to best methodologies and practice, the following measures are proposed for the mitigation of landscape/townscape and visual impacts:</p> <ul style="list-style-type: none"> Retained existing trees, planting, features etc. will be protected with temporary protective fencing at the boundary of proposed works areas. Existing trees along will be protected with fencing in accordance with BS5837:2012: Trees in relation to Construction and TII's Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub. Where existing trees, hedges, and/or plantings are removed from temporary acquisition areas, new planting and paving will be provided in replacement of those removed. In general, unless not feasible or practicable, new plant species will match that of those removed. Replacement plant sizes will be that readily available and therefore, is unlikely to match the maturity of plants removed (especially in the case of trees or larger plants). However, being of the same or similar species, maturity similar to that of the existing can be achieved in time. New boundaries to match the existing will be established on the setback line to match the existing boundary. The construction and provision of the new boundaries is to take account of the location of existing trees, other plantings, gradients, drainage, property features and access arrangements so as to minimise additional indirect effects. The Proposed Scheme will provide for the planting of new street trees both for mitigation of tree removal and for overall enhancement of streetscape environment. Species selected shall be appropriate to the urban street environment and to the characteristics of the specific location. This measure is applied along the full length of the Proposed Scheme. Proposals for the treatment of the public realm within the streetscape effected by the Proposed Scheme will have regard to the existing character of the street or location, Galway Public Realm Strategy and to opportunities for enhancement of the public realm and the streetscape. Proposals will have regard to historic details and features, 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			to the quality of existing and proposed materials, to the reduction of clutter, ease of legibility, and management and maintenance requirements.	
LV3	16.5.1.2	Throughout (as required)	The design process of the Proposed Scheme has considered the potential for negative landscape / townscape and visual effects. Opportunities to avoid, reduce or remediate these have been taken wherever feasible, and landscape measures are integrated within the design as far as possible. It should be noted, that wherever feasible, the Proposed Scheme proposes improvements of the townscape / streetscape along the full length of the route.	Operational
LV4	16.5.1.3	Throughout (as required)	The works will have continuous monitoring under the Construction Environmental Management Plan to ensure adequate protection of trees, built heritage features., amenity and public realm areas outside of the construction works.	Construction
LV5	16.5.1.3	Throughout (as required)	Any construction within close proximity to the retained trees will be undertaken in accordance with approved method statements prepared by the construction contractor under the direct supervision of a suitably qualified consultant Arboriculturist. Therefore, during the construction works, a professionally qualified Arboriculturist is proposed to be retained by the principal contractor or site manager to monitor and advice on any works within the root protection area (RPA) of retained trees to ensure successful retention and planning compliance.	Construction
LV6	16.5.1.3	Throughout (as required)	On the completion of the construction works, all trees and vegetation retained is to be reviewed by the project Arboriculturist and any necessary remedial tree surgery works required to promote health and safety are to be implemented.	Construction

21.15 Waste and Resources

Table 21.13: Waste and Resources Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
WR1	17.5.1	Throughout (as required)	A Construction and Demolition Resource and Waste Management Plan (CDRWMP) has been prepared and this will be implemented (and updated as necessary) by the appointed contractor - refer to the CDRWMP within Appendix 5.1 Construction Environmental Management Plan (CEMP) in Volume 4 of this EIAR.	Construction
WR2	17.5.1	Throughout (as required)	<p>The following measures will be implemented during construction, where practicable, by the appointed contractor, to ensure the maximum quantity of material is reused on the Proposed Scheme and to contribute to achieving the objectives set out in the National Waste Action Plan as follows:</p> <ul style="list-style-type: none"> • Stockpiling of existing sub-base, capping layer and topsoil material generated on-site for direct reuse in the Proposed Scheme where practicable in the proposed construction compounds (subject to material quality testing to ensure it is suitable for its proposed end use); and • Recycled aggregates and reclaimed asphalt will be specified in the Proposed Scheme, where practicable. 	Construction
WR3	17.5.1	Throughout (as required)	<p>The following management measures will be implemented in so far as reasonably practicable:</p> <ul style="list-style-type: none"> • Where waste generation cannot be avoided, waste disposal will be minimised; • Opportunities for reuse of materials, by-products and wastes will be sought throughout the Construction Phase of the Proposed Scheme; • Possibilities for reuse of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use; • Where excavated material cannot be reused within the Proposed Scheme works, material will be sent for recovery or recycling; • Source segregation: Metal, timber, glass and other recyclable material will be segregated (and waste stream colour-coding will be used) during construction works and removed off site to a permitted / licensed facility for recycling; 	Construction

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<ul style="list-style-type: none"> • Material management: ‘Just-in-time’ delivery, where practicable, will be used to minimise material wastage; • General construction waste and by-products will be reused within the Proposed Scheme, where practicable, or appropriately reused (in accordance with Article 27 of the Waste Directive Regulations), recovered, recycled or disposed of off-site, as arranged by the appointed contractor; and • Any hazardous waste arising will be managed by the appointed contractor in accordance with the applicable legislation. • Waste Auditing: The quantity and types of waste and materials leaving site during the Construction Phase will be recorded by the appointed contractor. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity to each facility. Records will show material which is recovered, which is recycled and which is disposed of. • Where Article 27 notifications are required in relation to the Proposed Scheme, the appointed contractor will complete and submit these Article 27 notifications to the EPA for by-product reuse. • Any off-site interim storage or waste management facilities for excavated material will have the appropriate EPA licence, Waste facility permit or Certificate of Registration, as appropriate, in place. • The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., EPA Licence, Waste Facility Permit or Certificate of Registration). 	

21.16 Material Assets

Table 21.14: Material Assets Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
MA1	18.6.1	Throughout (as required)	Where there are interfaces with existing utility infrastructure, protection in place or diversion as necessary is proposed to prevent long-term interruption to the provision of the affected services.	Construction
MA2	18.6.1	Throughout (as required)	<p>All possible precautions will be taken by the appointed contractor to avoid unplanned interruptions to any services during the Construction Phase of the Proposed Scheme. This will include appropriate investigation by the appointed contractor to identify the location of all utility infrastructure within the working areas prior to the commencement of excavation works.</p> <p>Where works are required in and around utility infrastructure, precautions will be implemented by the appointed contractor to protect the infrastructure from damage in accordance with best practice methodologies and the requirements of the utility companies where practicable. Protection measures during construction will include warning signs and markings indicating the location of utility infrastructure, safe digging techniques in the vicinity of known utilities, and in certain circumstances where possible, isolation of the section of infrastructure during works in the immediate vicinity.</p>	Construction
MA3	18.6.1	Throughout (as required)	All utility companies for which diversions are proposed will continue to be consulted when designing any diversions to ensure that proposed diversions conform to the utility provider's requirements, where practicable, and to ensure that service interruptions are kept to a minimum.	Construction
MA4	18.6.1	Throughout (as required)	<p>Where diversions or modifications are required to utility infrastructure, service interruptions and disturbance to the surrounding residential, commercial and/or community property may be unavoidable.</p> <p>Where this is the case, it will be planned in by the appointed contractor in consultation with each utility provider, as relevant. Required service interruptions will generally only occur for a set period of time per day (a set number of hours not exceeding eight hours where reasonably practicable) and will generally not be continuous for full days at a time.</p>	Construction

Mitigation Number	EIA Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
			<p>Prior notification will be given to all impacted properties. This notification will include information on when interruptions and works are scheduled to occur and the duration of such interruption.</p> <p>Any required works will be carefully planned by the appointed contractor to ensure that the duration of interruption is minimised in so far as is practicable.</p>	
MA5	18.6.2	Throughout (as required)	<p>Consideration will be given to the sustainability of material being sourced for the construction of the Proposed Scheme by the appointed contractor.</p> <p>In so far as is reasonably practicable, materials required for the construction of the Proposed Scheme will be sourced locally to reduce the amount of travelling required to get the material to the site.</p> <p>Key issues to be considered when sourcing materials for the Construction Phase will include the source, the material specification, production and transport costs, and the availability of the material.</p> <p>Only quarries which are included in local authority quarry registers will be used by the appointed contractor to source any quarried material.</p>	Construction
MA6	18.6.2	Throughout (as required)	<p>Construction materials will be managed on site by the appointed contractor in such a way as to prevent over-ordering and waste.</p> <p>Materials will be stored in appropriate storage areas or receptacles to reduce the potential for damage requiring replacement.</p> <p>“Just In Time” ordering principles will be implemented by the appointed contractor where practicable in order to reduce over-ordering.</p>	Construction

21.17 Major Accidents

Table 21.15: Major Accidents Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
n/a	n/a	n/a	No additional mitigation or monitoring measures are considered necessary beyond those already identified in other environmental assessments and the CEMP (Appendix 5.1 in Volume 4 of this EIAR).	n/a

21.18 Cumulative Impacts

Table 21.16: Cumulative Impacts Mitigation Measures

Mitigation Number	EIAR Section Reference	Location	Description of Mitigation or Monitoring Measure / Environmental Commitment	Implementation Stage
CI&EI1	20.5.1	Throughout (as required)	Other infrastructure projects could directly interface with the construction of the Proposed Scheme. Interface liaison will take place on a case-by-case basis through GCC, as will be set out in the Construction Contract, to ensure that there is coordination between projects, that construction access locations remain unobstructed by the Proposed Scheme works and that any additional construction traffic mitigation measures required to deal with cumulative impacts are managed appropriately.	Construction

21.19 References

British Standards Institution (BSI) (2010). BS 3998:2010 ‘Tree Work – Recommendations’

British Standards Institution (BSI) (2012). BS 5837:2012 ‘Trees in relation to in relation to design, demolition and construction. Recommendations’

British Standards Institution (BSI) (2014). BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise

CIRIA (2001). CIRIA C532: Control of Water Pollution from Construction Sites – Guidance for consultants and contractors.

EPA (2021). Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects [Online] Available from https://www.epa.ie/publications/circular-economy/resources/C_and_D_Guidelines-.pdf

European Commission (2018). EU Construction and Demolition Waste Protocol and Guidelines.

ISO (2016). ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures.

ISO (2017). ISO 1996-2:2017 - Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels.

TII (2013) Specification for Road Works Series 600 - Earthworks (including Erratum No. 1, dated June 2013) CC-SPW-00600

TII (2020a). The Management of Invasive Alien Plant Species on National Roads – Technical Guidance

TII (2020b). The Management of Invasive Alien Plant Species on National Roads – Standard

Directives and Legislation

S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 as amended

Waste Management Act 1996, as amended

S.I. No. 241/2006 – European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations 2006

S.I. No. 419/2007 - Waste Management (Shipments of Waste) Regulations 2007, as amended

S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007, as amended.

S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018