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17 Schedule of Environmental Commitments

17.1 Introduction


This chapter presents a summary of the key mitigation measures identified in Chapters 6 to 15 of the Environmental Impact Assessment Report (EIAR). Mitigation describes the measures proposed in order to avoid, reduce and where practicable remedy significant adverse effects. It is also a means by which design decisions for the Proposed Project are modified to avoid, reduce or remedy the adverse environmental effects that are identified.

Mitigation measures have been incorporated into the design of the Proposed Project and will be applied during the construction and operation of the Proposed Project. All mitigation measures are based on the Proposed Project as described in Chapter 5 “Description of the Proposed Scheme”. Individual chapters of this EIAR should be referenced for context of the specific mitigation measures however a summary has been presented in the tables below. The mitigation measures for both the construction and operational phases are detailed as appropriate.

The contractor appointed to construct the Proposed Project will be required to compile and maintain a Construction Management Plan.

17.2 Mitigation Measures

Table 17-1: Biodiversity Measures

No.	Description
6.9	<p>Contamination of watercourses. As the Ballyhale River watercourse traverses through the subject site, and substantial instream works are proposed, a project aquatic ecologist will be appointed by the employer representative prior to works or site clearance commencing on site. All works in the riparian corridor will be carried out in consultation with IFI, NPWS and the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses.</p> <p>All works on site and in the riparian corridor should have sufficient mitigation measures to prevent the movement of silt downstream during works. This should include measures outlined by the project ecologist including silt fences, phasing of the project to initially carry out localised diversion works and immediate landscaping of the riparian corridor following works.</p>
6.9.1	<p>Riparian Corridor Construction Stage</p> <p>As significant site clearance is involved in the project and the site is on sloping land adjacent to a watercourse, measures need to be put in place to ensure that runoff from the site during construction is contained and that silt is intercepted. The following measures will be carried out to ensure that the site runoff is suitably contained during construction:</p> <ul style="list-style-type: none"> Site works will commence with the submission of a construction methodology to the employer. It should be noted that the watercourse will be fisheries compliant and will contain features for biodiversity enhancement.  <ul style="list-style-type: none"> It is important that the area cleared within the potential flood zone is landscaped immediately following the works to limit any silt entering the stream during a flood. The placing of silt fences in the riparian corridor will be carried out to prevent runoff entering the newly established riparian corridor, as directed by the project ecologist. It is important that the bases of these are buried deeply in the soil as this area has the potential to be flooded and they could cause downstream impacts if not installed correctly. There will be no machinery access into the watercourse. A project ecologist will be onsite during all instream works. The ecologist will monitor twice daily turbidity, pH and oxygen levels both

	<p>upstream of the proposed works and submit weekly reports to NPWS and IFI for the duration of the works.</p> <ul style="list-style-type: none"> The ecologist will have the ability to cease all works immediately without delay and request additional measures to be implemented in the event of elevated siltation or reduced oxygen levels in the watercourse. Following the completion of this element of the project this area of the site will be closed off to machinery access and relandscaped.
6.9.2	<p>Works outside the riparian corridor</p> <ul style="list-style-type: none"> The project ecologist will outline a method statement to the employer prior to works commencing on site. This will include the placement of silt fences will be placed along the edge of the riparian corridor (outside of future construction areas) to capture runoff from the site. These will also prevent machinery from entering the riparian corridor. Mitigation measures including silt fences will be in place to capture silt from runoff and prevent it from entering the stream during the terrestrial works. Appropriate storage and settlement facilities will be provided on site. This could include the provision of silt and petrochemical interception for water pumped on site (if required). Fuel, oils and Chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of the watercourse. In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques.
6.9.3	<p>Permanent Flow Diversion Methodology</p> <p>Sensitive species are located downstream of the works (Otter (<i>Lutra lutra</i>) and Freshwater Crayfish (<i>Austropotamobius pallipes</i>) and the subject site is located within a designated Freshwater Pearl Mussel (<i>Margaritifera</i> (<i>Marga ritifera</i>) <i>Margaritifera</i>) sensitive area (Figure 6.15). In, in addition the works have a direct hydrological pathway to two Natura 2000 sites downstream. As a result of the species and designated sites downstream and the necessity to comply with Water Pollution Acts, it has been deemed necessary to limit the potential impact of the works and implement mitigation measures and carry out the instream works as follows:</p> <p>Pre-Installation:</p> <ul style="list-style-type: none"> Prior to carrying out the works the project will: Notify IFI one week in advance of works commencing. Electrofishing (under licence) the water within the full extent of the works location to 50m downstream (if required by IFI), at the start of the project. Remove any fish and transport downstream. All works will be done in the dry <p>Installation process (live downstream culvert):</p> <ul style="list-style-type: none"> A temporary localised stream diversion will be prepared with sand bags to divert the water to the west of Ballyhale. A minimum of four independent terram baffles will be placed downstream of the proposed works.

	<ul style="list-style-type: none"> • The control device will be installed in the dry while the river remains on its diverted course. The excavation will leave two areas of soil at either end of the localised diversion to prevent the river from entering the works area. • Pumps will be placed within the diversion area should any seepage, rainwater or groundwater enter the works area. These are to be connected to silt busters/or to the onsite swales as directed by the project ecologist (and not directly back to the stream without filtering). Any seepage/rainwater/groundwater will be pumped onto open ground north of the river and allowed to seep naturally into the groundwater. No runoff will be allowed back into the stream. • The excavated material will be stockpiled on site away from the watercourse (min 20m). • The new precast sections will be lifted with the crane and placed on to the bed of Sand/stone as required. • Minor adjustments if required will be made to ensure the first section is correct for line and level. • The remaining sections will be installed using the same procedure. • Backfill material will be placed and compacted in layers. • The ecologist will be in attendance for environmentally sensitive works. • On completion of the backfilling the small remaining sand bags will be removed. • Silt interception methods including terram baffles will be implemented downstream prior to instream works. • Instream biodiversity elements will be placed within the watercourse as instructed by the ecologist/IFI. • A gradual switchover will be implemented and the stream will flow through the newly installed elements under supervision of project ecologist. • A gradual switch over to the diversion will be monitored by the project ecologist. • Once the full flow is in the diversion and stable the existing stream bed will then be gradually blocked off with sandbags and final elements will be carried out behind sand bags. • When complete downstream mitigation measures will be removed. <p>The future diversion of and installation of the project elements in the Knockwilliam Stream Ballyhale River will be carried out in the dry, in order to mitigate the silt disruption. During the works period, a project ecologist will be in attendance to monitor sensitive works (instream/connection works). The Knockwilliam Stream Ballyhale River will be connected to its new course following the installation under the supervision of the project ecologist. IFI may require inspection of the works prior to the Knockwilliam Stream Ballyhale River becoming live in the new diversion.</p>
Table 6-6	<ul style="list-style-type: none"> • A project ecologist will be present throughout the instream works and monitor water quality on site. • All relevant in-stream works methodologies will have prior approval of Inland Fisheries Ireland. • Staging of project to reduce risks to watercourses from contamination with all instream works being carried out in Phase 1 of the project, where the stream is diverted, landscaped and protected from all subsequent phases.

	<ul style="list-style-type: none"> Local watercourses (Knockwilliam Stream Ballyhale River) will be protected from dust, silt and surface water throughout the works. This will include the placing of silt fences and monitoring of dust levels which will be overseen by the project ecologist. The measures will include: Local silt traps established throughout site. Mitigation measures on site include dust control, stockpiling away from watercourse and drains. Stockpiling of loose materials will be kept to a minimum of 20m from watercourses and drains. Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses. Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches or the watercourse, excavations and other locations where it may cause pollution. Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the stream. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality. The excavation of the localised diversion should be carried out in the dry with no connections to the existing watercourse, until the works are complete with the exception of the small areas where the stream is currently live. De-stocking of the stream may need to be carried out under Licence prior to the commencement of works and upstream and downstream permeable barriers to remain in place until construction is completed. In stream works to be carried out in full consultation with Inland Fisheries Ireland and the project ecologist. Staging of project to initially stabilise, isolate, fence off watercourse on site. During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the watercourse. Petrochemical interception and bunds in refuelling area On-site inspections to be carried out by project ecologist. Maintenance of any drainage structures (e.g. de-silting operations) will not result in the release of contaminated water to the surface water network. No entry of solids to the associated stream or drainage network during the connection of pipework to the public water system Landscaping of the Riparian corridor should be carried out to the satisfaction of IFI and the project ecologist.
Table 6.6	<p>Measures outlined above in addition to:</p> <ul style="list-style-type: none"> Measures outlined above in addition to: No discharges will be to the watercourse during and post works.

	<ul style="list-style-type: none"> • Silt traps established throughout site including a double silt fence between the site and the watercourse. • Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks. • The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained. • The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area. • A project ecologist will be appointed and be consulted in relation to all onsite drainage during construction works. Consultation with the project ecologist will not involve the formulation of new mitigation measures for the purposes of protecting any European Site and relate only to the implementation of those mitigation measures already stated in the submission or the formulation of mitigation for other purposes. • Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site into the watercourse during the works. • Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches. • Abstraction of water from watercourses is not to be permitted. • Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis. • All site personnel will be trained in the importance of good environmental practices including reporting to the site manager when pollution, or the potential for pollution, is suspected. All persons working on-site will receive work specific induction in relation to surface water management and run off controls. Daily environmental toolbox talks / briefing sessions will be conducted to outline the relevant environmental control measures and to identify any environment risk areas/works. • Environmental risks due to construction and operation of the proposed development do potentially exist, particularly in relation runoff from sloping site, drains that could lead to the watercourse. Ecological supervision will be required during localized diversion, excavation and enabling works stages. Silt interception measures will need to be in place to ensure that the watercourses are not impacted during works and in particular during the site clearance, in-stream works and reprofiling stages. Landscaping of the grassed areas of the site proximate to the watercourse should take place immediately following re-profiling, to act as a buffer to protect the watercourse. • Daily turbidity and oxygen monitoring of the watercourse (upstream, downstream of works) should take place during works by the project ecologist. This would be particularly important following high rainfall events. It is recommended that sufficient baseline readings are made prior to construction commencing to understand the existing turbidity on site particularly in the pond area as this appeared turbid during the site visit.
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	<ul style="list-style-type: none"> • Storage/Use of Materials, Plant & Equipment • Materials, plant and equipment shall be stored in the proposed site compound location; • Plant and equipment will not be parked within 50m of the watercourse at the end of the working day; • Hazardous liquid materials or materials with potential to generate run-off shall not be stored within 50m of the watercourse. • All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater; • Fuel may be stored in the designated bunded area or in fuel bowsters located in the proposed compound location. Fuel bowsters shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages; • Smaller quantities of fuel may be carried/stored in clearly labelled metal Jeri cans. Green for diesel and red for petrol and mixes. The Jeri cans shall be in good condition and have secure lockable lids. The Jeri cans shall be stored in a drip tray when not in use. They will not be stored within 50m of the watercourse. • Drip trays will be turned upside down if not in use to prevent the collection of rainwater; • Waters collected in drip trays will be assessed prior to discharge. If classified as contaminated, they shall be disposed by a permitted waste contractor in accordance with current waste management legal and regulatory requirements; • Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips; • No plant used shall cause a public nuisance due to fumes, noise, and leakage or by causing an obstruction; • Re-fuelling of machinery, plant or equipment will be carried out in the site compound as per the appointed Construction Contractor re-fuelling controls; • The appointed Construction Contractor EERP will be implemented in the event of a material spillage; • All persons working will receive work specific induction in relation to material storage arrangements and actions to be taken in the event of an accidental spillage. Daily environmental toolbox talks / briefing sessions will be conducted for all persons working to outline the relevant environmental control measures and to identify any environment risk areas/works. • Consultation with Inland Fisheries Ireland will be carried out pre and post works is essential and to be led by the project ecologist.
Table 6.6	<ul style="list-style-type: none"> • “Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.

Table 6.6	<ul style="list-style-type: none"> • 5 bird boxes (including 2 x dipper boxes) will be placed on site. • Pre-inspection survey for dippers prior to construction commencing.
Table 6.6	<ul style="list-style-type: none"> • Preconstruction survey for mammals and frogs

Table 17-2: Hydrology Mitigation Measures

No.	Description
7.5.2	<p>Mitigation Through Design - The project layout has evolved in order that the design avoids unnecessary conflict with the water environment. Design evolution to minimise environmental impact has been prioritised throughout the various design stages. This is detailed in the Options Report which supported the Flood Relief Scheme Option Selection and has been continued throughout the planning stage and design phases.</p>
7.5.3	<p>The EOP shall be designed to assist the main contractor in preventing, managing and/or minimising significant environmental impacts during the construction phase. To achieve this objective the EOP shall:</p> <ul style="list-style-type: none"> • Comprehensively incorporate all Environmental Commitments set out in the Contract documents, Planning Documents (including EIAR), any conditions and/or modifications imposed by An Bord Pleanála or the Local Authority. • Provide a method of documenting compliance with these Environmental Commitments and conditions/modifications. • Itemise relevant environmental legislative requirements and best practice guidance. The EOP should also provide a method of documenting compliance with these requirements. • Outline methods by which construction work will be managed to prevent, reduce or compensate for potential adverse impacts on the environment. • Incorporate procedures for communicating with the public, statutory consultees, Local Authority and relevant site-personnel. • Incorporate procedures for Environmental Awareness Training for the main contractor's staff. • Incorporate monitoring procedures and responses to monitoring results, where contractually required. • Provide for a system of audit with regard to the effectiveness of the EOP during the construction life cycle of the project. • Include an Emergency Response Plan (ERP) detailing the procedures to be undertaken in the event of a spillage of chemical, fuel or hazardous wastes, fires or flood events. <p>The EOP shall be co-ordinated with all other environmental procedural documents required which may include a Construction Management Plan and a Pollution Prevention Plan.</p>

7.5.4	<p>Construction stage drainage shall be encompassed by a robust Sustainable Drainage System (SuDS) design which will be used to control drainage and silt management on the site. Drainage measures to include</p> <ul style="list-style-type: none"> • All discharges from the works area will be routed through a “treatment train” of SuDS components to aid pollutant removal. No outflows or dewatering flows from the works area should discharge directly into watercourses. • Construction drainage ditches should take the form of wide, flat-bottomed swales designed to convey flows at a low velocity. • Providing settlement ponds where runoff from the works area areas is attenuated and treated prior to discharge to watercourses. Permanent ponds are proposed to cater for the operational phase drainage and the areas acquired for these areas can be used for temporary settlement ponds. • Discharges should travel over vegetated buffer strip at low velocities prior to discharge to maximise filtration and settlement. • All swales, crossings and other hydraulic features will be engineered to ensure that dimensions etc. are suitable to convey predicted flows and so prevent build-up of surface water and / or flooding. • Silt fencing or other appropriate measures shall be put in place downstream of exposed soils or soil stockpiles. • Vegetation should be established as soon as possible on all exposed soils. <p>Other measures to be employed throughout the construction and operational phases to minimise pollution risk include;</p> <ul style="list-style-type: none"> • Due consideration will be given to the prevailing ground and weather conditions when programming the execution of the works. • Foul Drainage from all site offices and facilities will be contained and disposed of in an appropriate manner to prevent pollution of rivers and local watercourses in accordance with the relevant statutory bodies. • Refuelling of construction machinery shall be undertaken in designated areas located away from surface water drainage in order to minimise potential contamination impacts on the water environment. Spill kits shall be kept in these areas in the event of spillages. • Oil and fuel stored on site for construction should be stored in designated areas. These areas shall be bunded (to min 110% of chemical volume) and should be located away from surface water drainage. • Pouring of concrete including wash down and washout of concrete from delivery vehicles to be controlled in an appropriate facility to prevent contaminating run-off and groundwater. • All batching and mixing activities shall be located in areas well away from watercourses and drains. • Any surface water abstracted from a river for use during construction will have an applicable licence agreement in place and will be fitted with a filter to prevent the intake of fish.
7.5.4	<p>For any construction work within or directly adjacent to the water the following mitigation measures will apply</p>

	<ul style="list-style-type: none"> • Works to be carried out in the dry (offline of outside the river channel) where possible. Suitable bunding, over-pumping, or temporary cofferdams to be put in place where required. • Relevant fisheries authorities shall be informed of all in-stream construction work scheduled to take place. Any in-stream or culverting works shall be undertaken in consultation and with the agreement of the relevant statutory body and during the permitted times of the year. • Hydrophilic grout / quick setting mixes / rapid hardener additives shall be used to promote the early set of any wet concrete required. Other materials such as biodegradable shutter oils should be considered. • There shall be no use of persistent pesticides, herbicides or artificial fertilisers in any landscaping or subsequent maintenance within a 10m buffer of a watercourse.
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Table 17-3: Land and Soil Measures

No.	Description
8.7.2	Mitigation Through Design - The site layout has evolved in order that the design minimizes impact on the land and soil environment. Design evolution to minimise environmental impact has been prioritised throughout the various design stages. This is detailed in the Options Report which supported the Flood Defence Scheme's Option selection and has been continued throughout the planning stage design.
8.7.3	<p>Construction Phase Mitigation - A Preliminary Construction Management Plan is included as part of the application documents. On appointment of a main contractor this preliminary document will be issued to them to be further developed into their final construction management plan for the project. The final construction management plan would be submitted by the contractor to be agreed with the planning authority prior to commencement of development. The plan will incorporate any conditions and/or modifications imposed by the planning permission and the plan will be maintained by the contractor during the construction phase. The Plan includes a range of site-specific measures which will include the following mitigation measures in relation to geology, soils, and land:</p> <ul style="list-style-type: none"> • Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. • At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas. Topsoil stripping will not take place during inclement weather. • Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains. Topsoil stockpiles will also be located so as not to necessitate double handling. • The design of site levels have been carried out in such a way as to minimize the interaction with rock. • The duration that rock layers are exposed to the effects of weather will be minimized by back filling excavations as soon as practicable after construction. • Stockpiles of excavated and crushed rock will be protected for the duration of the works.

	<ul style="list-style-type: none"> • Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to water bodies). • Earthwork's plant and vehicles exporting soil and delivering construction materials to site will be confined to predetermined haul routes around the site. • Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site. • Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods. • In order to mitigate against spillages contaminating underlying soils and geology, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. • Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets (when not possible to carry out such activities off site). • An Emergency Response Plan detailing the procedures to be undertaken in the event of a spillage of chemical, fuel or hazardous wastes will be prepared prior to construction. • Pouring of concrete including wash down and washout of concrete from delivery vehicles will be controlled in an appropriate facility to prevent contamination. • Regular samples will be taken from soils affected by earthworks which shall be analysed for contamination. • All materials exported from site to be in accordance with the Waste Management Acts. • Imported materials to be suitably separated to avoid contamination or mixing. • For imported materials, the use of local quarries or locally available material should be prioritised. • Any potential for use of surplus material within local sites shall be pursued at construction and detailed design stage (subject to compliance with Waste Management Acts). If any material is to be reused on another site as a by-product (and not as waste), this will be done in accordance with Article 27 of the Waste Directive Regulations.
8.7.4	<p>Operational Phase - Once the development is completed, risks to the geology, soil and land will be from loss of soil value and pollution of soils/subsoils due to accidental spills. The following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> • A detailed landscape plan will be prepared and constructed for the development to ensure all areas are planted and established. • Earthworks will be designed and constructed in accordance with good practice and design standards to ensure slope stability.

Table 17-4: Landscape and Visual Measures

No.	Description
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9.6	<p>The mitigation for the proposed scheme includes:</p> <ul style="list-style-type: none"> Avoidance of trees in particular large and significant trees such as the Lime Trees west of the Church and avoidance of other trees where possible. An Arboricultural assessment to assess tree quality was carried out. Tree removal is confined to Category 2 Trees (described as Fair) while no category A or B trees are to be removed. Category A trees are (defined as: <i>...a tree of high quality and value. These are trees that are particularly good examples of their species, which also provide landscape value. These trees are in such a condition as to be able to make a substantial contribution. (A minimum of 40 years is suggested)</i> Proposed tree planting along Main Street to replace removed trees (exact number, location and species TBC). Trees will be retained where possible. Design quality and detailing, particularly in the area near the Church of St Martin will need to be of high quality. Appropriate materials will be used to complement the sensitive elements of the built environment. Retention of the sensitive elements in this area is proposed.
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Table 17-5: Tree Protection Measures

No.	Description
9.7	<p>The mitigation for the proposed scheme includes:</p> <p>A6.1.1 D-001 St Martins Church</p> <ul style="list-style-type: none"> The works in this area must be well planned and supervised to avoid any unintended negative impacts on the four mature Lime trees (T10-13) located west of the watercourse. These trees are of very high amenity and heritage value and must be protected from construction activity during the proposed building works. The key recommendation in this area is that the construction activity should not cross the watercourse to the west bank which is, in effect, one large tree root zone. If machinery etc. must cross over the land within the root protection areas (RPAs as shown on the tree survey drawing) of these trees for reasons that are unavoidable and unforeseen, they must use suitable ground protection (such as ground protection mats) that prevents any significant soil compaction. If direct supervision of the works to prevent encroachment into the RPAs of the trees is not practical, then the trees should be protected by temporary 'construction-proof' fencing positioned along the west bank of the watercourse, with the fencing clearly labelled as not to be moved. <p>6.1.2 E-002 Tree Group G8 South of Proposed New Wall and Embankment</p> <ul style="list-style-type: none"> The building of the new flood wall and embankment south of the road bridge and private houses will obviously require considerable construction activity, some of which will be near the northern end of the riparian tree group (G8) following the river channel to the south. This group should be protected from excessive encroachment beyond which is essential during the works; temporary protection fencing should be erected approximately 4m from the trees stems of group G8 following the felling of trees T3-T6 to prevent machinery, haulage

	<p>vehicles etc. from compacting the root zones of the trees being retained along the river.</p> <p>6.1.3 E-004 Trees T17-18 East of Proposed New Embankment</p> <ul style="list-style-type: none"> The earthworks needed to create the proposed new embankment (004) between the main river channel to the east and watercourse to the west should be undertaken in such way that the heavy activity does not encroach into the RPAs of the trees labelled T17 and T18. The embankment has been designed to avoid the trees RPAs but it is important that the actual building activity be kept away from the trees by a line of temporary protective fencing, clearly labelled as above, until the embankment is completed. <p>6.1.4 P-002 Hazelbrook</p> <ul style="list-style-type: none"> The proposed channel realignment and revised fencing layout in the Hazelbrook cul de sac should be carried out with a minimum of encroachment towards the landscape trees located in the green open space between the houses and river channel. All works should be kept outside of the nominal RPAs of the trees making up groups G6 and G7 and tree T30 by way of temporary fencing for the duration of the works. <p>6.1.5 G-004 Tree Group G20 South of the Prendergast Tyres Premises</p> <ul style="list-style-type: none"> The proposed works to the river channel just east of the R448 (south of Prendergast Tyres) should be undertaken with due care and attention regarding the western end of the mixed tree group G20 growing along the south bank of the river. Construction machinery should avoid accessing the south side of the riverbank if at all practicable. <p>6.2 Tree Protection - General Recommendations</p> <ul style="list-style-type: none"> The tree protection measures should be in accordance with BS5837 (2012) Trees in relation to design, demolition, and construction – Recommendations. The project managers should appoint a qualified arborist to provide advice and guidance to the contractors carrying out the works. The arborist should meet the contractors on-site prior to works commencing and go through the tree protection measures, explaining the recommended procedures and emphasising the importance of protecting the trees during the course of the project. The project arborist should be available to attend the site on a regular basis to aid and advise the tree protection setup. Tree protection fencing should be erected around any undisturbed ground within the RPAs of trees being retained to prevent construction activity and machinery encroaching onto exposed soil, where it could cause compaction and root damage. The fencing and protective structures should be erected before site works commence and will not be removed or moved unless authorised by a qualified arborist. Where site machinery must encroach upon original soil surfaces or ground exposed by the removal of the existing hard surfacing within the RPAs of the trees to be retained for reasons unforeseen and unavoidable; suitable ground protection should be put in place to prevent any significant soil compaction or root damage near the trees; this should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight. Where an existing hard surface is removed within the RPA of a tree being retained, care should be taken not to disturb tree roots that might
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	<p>be present beneath it. Hand-held tools or appropriate machinery should be used (under arboricultural supervision) to remove the existing surface, working backwards over the area, so that the machine is not moving over the exposed ground. If a new hard surface is to be laid, it might be preferable to leave any existing sub-base in situ, augmenting it where required.</p> <ul style="list-style-type: none"> Any new underground services such as electricity cables, water pipes etc. will be routed away from the root protection areas of the trees to be retained; where this is not possible for reasons unforeseen, the services should be installed using specialist methodology (such as Airspade excavation, Air Vacuum truck or Mole drilling) that ensures minimal impact on any tree roots. All exposed roots and/or soil profiles containing roots of trees to be retained should be kept damp in dry conditions by regular watering and be covered with a double layer of hessian fabric to prevent desiccation. Where backfill is required, this should be of good quality topsoil, structural soil, or clean sand. Root severance should be avoided where possible, with no roots >25mm being cut without consultation with the project arborist. Where roots have to be cut back, they should be pruned with saw or secateurs to leave a clean cut. All site offices, materials storage, staff parking etc. should be located outside of the RPAs of the trees being retained. Where facilitation pruning is required to shorten or remove branching from trees being retained, this work should be carried out by qualified and experienced tree surgeons working to BS3998 (2010) Tree Work – Recommendations.

Table 17-6: Cultural Heritage Measures

No.	Description
10.5.1.2	<p>However, there is potential that human remains/graves might exist outside the existing western and northern boundary walls of the graveyard, as these enclosing walls were only constructed sometime after 1913, possibly in conjunction with the construction of the western channel. While it is probable that an earlier graveyard did not extend to the north and west of the existing, there is a tradition that unbaptised children, suicide victims and unmarried mothers were not buried in consecrated ground; in many cases such individuals were interred in lands outside, but adjacent to, existing graveyards and cemeteries. Ground clearance/reduction works associated with E-004 (berm/embankment), LW-002 (public realm walkway), E-003 (remove existing walkway and replacement) and D-001 (formation of new channel), together with any associated access works, have the ability to uncover any possible and hitherto unidentified, subsurface features of archaeological interest/potential that might exist within the associated construction corridors.</p> <p>In addition, there is increased archaeological potential in the area of L-001 (flood wall) and E-002 (berm/embankment) due to the respective locations adjacent the river and in light of subsurface features uncovered on the western bank (CH-2 and CH-3).</p>

	<p>Furthermore, works within the existing river/watercourse channels for clearance, deepening and bank regrading have the ability to result in the recovery of any archaeological artefacts that might be deposited within the watercourses.</p> <p>Without the adoption and implementation of a suitable mitigation strategy, any subsurface archaeological features or artefacts that might be located within the areas highlighted above, might not be identified and recorded during the construction phase of the scheme.</p> <p>Consequently, in light of the above, the following construction-stage mitigation measures are proposed: -</p> <ol style="list-style-type: none"> 1. Prior to the commencement of development, a suitably qualified and licence-eligible archaeologist shall be appointed. The archaeologist should prepare a methodology for approval by the Project Archaeologist before the application is submitted to the National Monuments Service. The methodology and licence application will be to obtain an excavation licence to undertake the works listed in 2 & 3 below and a detection licence with respect to the works listed in 4 below. 2. A programme of archaeological testing and metal detecting shall be undertaken with respect to the proposed flood embankment to rear of properties (E-004); such testing should be undertaken following transfer of the land ownership to Kilkenny County Council (i.e. post-planning decision). 3. A programme of archaeological monitoring shall be undertaken with respect to the construction of the contractor's compound, E-002 (berm/embankment) D-001 (new channel), E-003 (removal of existing walkway and replacement) and LW-001 (public realm walkway) and all associated construction access routes. 4. All clearance, deepening and bank regrading works in watercourses (e.g. G-001; D-002, X-003, G-002, G-003 & G-004) shall be subject to archaeological monitoring and all spoil shall be raked-over and subject to metal detecting. 5. In the event of archaeological material being uncovered during the course of such monitoring, the archaeologist shall be empowered to have works stopped in the vicinity of such material and shall inform the Project Archaeologist and the National Monuments Service, Department of Housing, Local Government and Heritage. Further mitigation measures will be agreed with the Project Archaeologist and the NMS. Likewise, should archaeological/historical artifactual material be recovered during such works, the requirements of the National Museum of Ireland with regard to such items should be implemented. 6. Following completion of the monitoring and any other possible archaeological investigations, the archaeologist shall prepare draft reports and summaries as appropriate, for submission to the Project Archaeologist for review. The approved reports and summaries will be submitted to a full and final report for submission to the Planning Authority and the Department of Housing, Local Government and Heritage and National Museum of Ireland.
	<p>As noted above in Section 10.4.2.3, it is not considered likely that the development, as proposed, will cause any direct impacts to any identified structures of architectural heritage interest, except for CH-12.</p> <p>In terms of CH-12 (Ballyhale Bridge), a new overflow culvert (P-002), with a flow control structure/overflow weir at its western terminal, will be constructed to the immediate north of the existing northern arch of the bridge; this will entail removal of part of the west-facing wall façade and parapet to the bridge, which will then be reinstated and extended using a mixture of the existing/original stone and new</p>

	<p>matching stone. It is considered that such works will result in a temporary impact of low magnitude on this medium sensitivity structure, which, when completed, are considered to result in a slight effect.</p> <p>It is generally not considered that any specific mitigation measures are required with respect to Architectural Heritage.</p> <p>It is noted that river channel works with respect to CH-12 will be subject to archaeological interventions, Section 10.5.1.2; No. 3). It is suggested that this specific asset be subject to the following mitigation measure:</p> <p>A detailed methodology for wall/parapet extensions and reinstatement works associated with CH-12 (Ballyhale Bridge) shall be prepared by a conservation engineer for agreement with the Conservation Officer, Kilkenny County Council</p>
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Table 17-7: Population and Human Health Measures

No.	Description
11.7.1	<p>Construction Phase - The works include a number of elements as outlined in the PCEMP which will affect access or operations within residential and commercial properties. The contractor shall liaise with all property owners to ensure the works schedule is co-ordinated with landowner requirements to minimise disturbance and provide temporary access measures as appropriate. Particular landowner requirements or restrictions shall be included within tender documents for the project.</p> <p>Measures to protect health and safety during the construction phase will be included in the Contractors Construction Stage Construction Management Plan.</p>

Table 17-8: Air Quality Measures

No.	Description
12.6.2	<p>Chapter 5 highlights the following mitigation measures to be implemented during the construction phase:</p> <ul style="list-style-type: none"> • Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust. • Use of receptor skips during construction activities. • During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only. • Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper. • The overloading of tipper trucks exiting the site shall not be permitted. • Aggregates will be transported to and from the site in covered trucks. • Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.

	<ul style="list-style-type: none"> Wetting agents shall be utilised to provide a more effective surface wetting procedure. Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels. All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. Material stockpiles containing fine or dusty elements including topsoils shall be covered with tarpaulins. Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system. A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition and PM10 are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented. A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
	<p>Communications</p> <ul style="list-style-type: none"> Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. Display the head or regional office contact information.
	<p>Dust Management</p> <ul style="list-style-type: none"> Dust management measures may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.
	<p>Site Management</p> <ul style="list-style-type: none"> Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to the local authority when asked.

	<ul style="list-style-type: none"> Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook. If applicable, hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
	<p>Monitoring</p> <ul style="list-style-type: none"> Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
	<p>Preparing and maintaining the site</p> <ul style="list-style-type: none"> Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. Cover, seed or fence stockpiles to prevent wind whipping.
	<p>Operating vehicle/machinery and sustainable travel</p> <ul style="list-style-type: none"> Ensure all vehicles switch off engines when stationary - no idling vehicles. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.

	<ul style="list-style-type: none"> Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	<p>Operations</p> <ul style="list-style-type: none"> Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
	<p>Waste Management</p> <ul style="list-style-type: none"> Waste Material to be disposed of at an appropriately licensed facility.
	<p>Measures specific to demolition.</p> <ul style="list-style-type: none"> Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. Avoid explosive blasting, using appropriate manual or mechanical alternatives. Bag and remove any biological debris or damp down such material before demolition.
	<p>Measures specific to earthworks.</p> <ul style="list-style-type: none"> Avoid scabbling (roughening of concrete surfaces) if possible. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
	<p>Measures specific to construction.</p> <ul style="list-style-type: none"> Avoid scabbling (roughening of concrete surfaces) if possible.

	<ul style="list-style-type: none"> • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
	<p>Measures specific to trackout.</p> <ul style="list-style-type: none"> • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Record all inspections of haul routes and any subsequent action in a site logbook. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Access gates to be located at least 10 m from receptors where possible.
	<p>Monitoring</p> <ul style="list-style-type: none"> • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority if and when requested. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority if and when requested. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. <p>Agree dust deposition and/or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.</p>

Table 17-9: Noise and Vibration Measures

No.	Description
13.6.1	<p>Appropriate mitigation measures have been identified to ensure the Construction Phase target noise limits are not exceeded. The contractor will be required to implement the control measures recommended in BS 5228 and apply the appropriate measures where applicable. Other measures will include:</p> <ul style="list-style-type: none"> Working hours during site construction operations will be restricted to daytime hours from 07:30 hours to 16:30 hours (Monday to Friday) and, as may be required, from 08.00 hours to 13.00 hours (Saturdays). Evening and night-time work is not expected to take place although it is possible that limited 24 hours working may be required to take place on occasion. This will only take place with the prior agreement of Kilkenny County Council. An on-site speed limit will be enforced for all traffic. Drivers of vehicles will be advised of the speed limits through the erection of signs i.e. a typically recommended on site speed limit is 10 km/hr. Where practicable, the use of quiet working methods and the most suitable plant will be selected for each activity having due regard to the need for noise control. Best practicable means will be employed to minimise noise emissions and will comply with the general recommendations of BS 5228. To this end operators will use “noise reduced” plant and/or will modify their construction methods so that noisy plant is unnecessary. By positioning potentially noisy plant as far as possible from noise sensitive receivers the transmission of sound can be minimised. Earth mounds and/or stockpiles of material or perimeter hoarding on site can be used as a physical barrier between the source and the receiver. Mechanical plant used on site will be fitted with effective exhaust silencers. Vehicle reverse alarms will be silenced appropriately in order to minimise noise breakout from the site while still maintaining their effectiveness. All plant will be maintained in good working order. Where practicable, machines will be operated at low speeds and will be shut down when not in use. Compressors will be of the “noise reduced” variety and fitted with properly lined and sealed acoustic covers. In all cases engine and/or machinery covers will be closed whenever the machines or engines are in use. All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufactures. Where practicable, all mechanical static plant will be enclosed by acoustic sheds or screens. Employees working on the site will be informed about the requirement to minimise noise and will undergo training on the following aspects: <ul style="list-style-type: none"> The proper use and maintenance of tools and equipment. The positioning of machinery on-site to reduce the emission of noise to the noise sensitive receivers. Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.

	<ul style="list-style-type: none"> • The use and maintenance of sound reduction equipment fitted to power pressure tools and machines. • Cognisance will also be taken of the Environmental good practice site guide 2005 compiled by CIRIA and the UK Environment Agency. This guide provides useful and practical information regarding the control of noise at construction sites. • Where excessive noise levels are recorded, further mitigation measures will be employed which may include temporary wooden hoarding / acoustic screening to be installed to a height of no less than 2m around areas of construction where loud noise levels occur. • The contractor will ensure that the TII Guidelines which identify limits for protection against cosmetic damage as a function of vibration frequency are not exceeded through the use of the selected low vibration piling method. • Responsible Person –The Contractor will appoint a responsible and trained person who will be present on site and who will be willing to answer and act upon complaints and queries from the local public. • Night-time Working - If there are items of plant (e.g. dewatering pumps and similar) in use during night-time hours they will be chosen, sited and enclosed such that levels at the nearest properties do not exceed the measured background noise levels.
13.6.2	<p>Monitoring</p> <ul style="list-style-type: none"> • Where deemed necessary due to excessive impact or complaints received, noise monitoring will be undertaken during construction works to determine noise levels at noise sensitive receivers. On the basis of the findings of such noise monitoring, appropriate noise mitigation measures will be implemented to reduce noise impacts. • The contractor will conduct continuous monitoring of vibration levels during any piling that may have the potential to result in a vibration impact at nearby properties.

Table 17-10: Material Assets Measures

No.	Description
14.5.1	<p>The Contractor will comply with the conditions of the EIAR and will produce a Construction & Environmental Management Plan (CEMP) to detail how the project is to be executed in accordance with all project, statutory and environmental requirements. This includes a range of site-specific measures which will include the following mitigation measures in relation infrastructure, services and public utilities:</p> <ul style="list-style-type: none"> • The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a temporary connection to the public foul drainage network has been established (subject to connection agreement with Irish Water). • The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials. • The Contractor will be obliged to put measures in place during the construction phase to ensure that there are no interruptions to existing

	<p>services and all services and utilities are maintained unless this has been agreed in advance with the relevant service provider and local authority. All works in the vicinity of utilities infrastructure will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.</p> <ul style="list-style-type: none"> • The contractor will obtain updated utility service maps from the relevant service provider to ensure accurate service information is available. • The contractor will be obliged to put in measures in place from the 'Safe Construction With Electricity' guidance document. • The contractor will check the route and location of any utilities prior to any excavation works by reviewing the relevant service providers maps and scanning for services. • The contractor will follow the Irish Water Code of Practice when working near and around the watermain located on the main street bridge. The developer will issue work method statements to Irish Water prior to work commencing near the watermain.
	<p>This section describes measures which will be taken to mitigate against significant impacts on land and property assets. The assessment does not take account of aspects such as compensation for land acquisition and other impacts. These matters will be agreed with affected landowners or their agents following approval of the scheme. A property arbitrator will be utilised where mutual agreement cannot be achieved. The TII "Guide to Process and Code of Practice for National Road Project Planning and Acquisition of Property for National Roads" will be used with respect to lands potentially impacted by the scheme.</p> <p>The following general mitigation measures are proposed for the proposed development:</p> <ul style="list-style-type: none"> • Mitigation by design has been an integral part of the scheme design whereby design development and the design of individual scheme elements has sought to minimise unnecessary disturbance to land and property. • Access will be maintained to all affected property both during construction and operational stage. • Where part of the curtilage of a property is to be permanently acquired, the acquiring authority will hold discussions with the property owner and generally agree to replace boundaries on a like for like basis, subject to safety considerations. • Prior to construction and subject to written agreement of the relevant property owners, property condition surveys will be undertaken in relation to all buildings / structures which could be affected by the works. • Any drainage or services that are interfered with as a result of the road development will be repaired / replaced without unreasonable delay. • All rights of way shall be either maintained or amended to suit the post scheme layout. <p>Further mitigation specific to individual properties for other impacts are detailed and described in Chapter 5 Description of the Scheme, the scheme CEMP, and within other supporting chapters of this EIAR.</p> <p>A detailed Land and Property Impact Assessment is presented in Appendix 14.1 which sets out the impact on each land parcel affected by the scheme CPO. This assessment is summarised in Table 14 4</p>

Table 17-11: Traffic and Transport Measures

No.	Description
15.5.1	<p>Construction of the proposed scheme will cause temporary short-term traffic impacts on the local road network. Enforcement of a range of integrated control measures and associated management initiatives, also included in the Construction Traffic Management Plan, will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site access locations and any necessary temporary lane closure requirements.</p> <p>The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:</p> <ul style="list-style-type: none"> • All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel. • A dedicated 'construction' site access / egress junction will be provided during all construction phases. • Adequate storage space on site to be provided. • A regular programme of site tidying to be established to ensure a safe and orderly site. • Use of precast / prefabricated materials where possible. • A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities. • A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas. • Consolidation of delivery loads to / from the site and management of large deliveries on site to occur outside of peak periods. • Scheduling of movements to outside peak traffic times and school pick-up / drop-off times. • Scheduling of deliveries to minimise number of HGV's at site during a single period. • Mud spillages on roads and footpaths outside the site to be cleaned regularly and will not be allowed to accumulate. • On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works. • Wheel-wash facilities will be provided whenever vehicles exit the sites and the site compound, entering back onto the public road network. Indicative wheel-wash locations are illustrated in Figure 15 17. • Dedicated road sweeper will be put in place and will be located in the site compound. It will sweep the haul routes via public roads. During peak vehicle movements, where there is a likelihood of dirt on construction vehicles exiting the site, a dedicated road sweeper will be put in place until these works are completed. During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.