26.0 Mitigation and Monitoring

Introduction

26.1 As discussed within this Environmental Impact Assessment Report (EIAR), the design of the proposed development has been progressed taking account of identified environmental constraints and considerations, enabling avoidance or reduction of potential environmental effects where practicable.

26.2 This Chapter provides a summary of the additional mitigation measures presented in **Chapters 7** to **24**, which are considered necessary to further avoid, reduce or offset potentially significant impacts, prior to construction, during construction and/ or during operation of the proposed development. Standard mitigation measures that are usually applied during the construction phase of projects are also included where relevant.

26.3 Embedded mitigation, has been incorporated into the proposed development where possible and is discussed by the topic specialists where relevant to their chapters. The approach was taken to assess the proposed development including embedded mitigation which is built into the design of the proposed marina expansion project (e.g. landscaping), identify the significance of effects and then, where necessary, define additional and standard mitigation to address the effects and report the residual significance.

Mitigation Schedule

26.4 **Table 26.1** below presents a summary of the standard and additional mitigation measures (including monitoring) per topic for the proposed development.

Table 26.1: Additional Mitigation and Monitoring Schedule

Mitigation Item/ Category	Timing of Measure	Description
Coastal Processes		
Monitoring	Dredging	Monitoring will be undertaken to support the dredging plan which has been developed for the proposed development whereby maintenance dredging will be undertaken to maintain access channels and berths at their designed depths by removal of accumulated sediments such as mud, sand and gravel.
Navigation and Safety		
Monitoring	Construction and Operational	In terms of navigation and safety, the continued presence of all identified existing mitigation and the implementation of all suggested additional mitigation should be monitored throughout the progress of the project. This should include for scheduled periodic reviews at reasonable intervals in the project programme. Monitoring of the status of embedded mitigation and other assumptions made as part of the Navigational Risk Assessment (NRA) (Appendix 8.1 – Volume 2) and the impact assessment contained within chapter 8 (Navigation and Safety) will ensure that the findings remain accurate and up to date throughout.
Major Disasters and Accidents		
N/A	N/A	The assessment provided in Chapter 9 (Major Accidents and Disasters) has concluded that with the implementation of the measures included in the development (i.e. designed in and management measures (controls)), that the development's vulnerability to risks of major accidents and/or natural disasters will not result in significant adverse effects on the environment. Therefore, no further additional mitigation measures are proposed.

Mitigation Item/ Category	Timing of Measure	Description
Flood Risk		
N/A	N/A	The embedded mitigation measures for the proposed development, as discussed in Chapter 10 have removed the need for additional mitigation measures
Water Quality		
Construction Environmental Management Plan (CEMP)	Construction	The CEMP must include details on appropriate measures to manage and mitigate risk to Loch Ryan, including but not limited to: • Construction site runoff and sedimentation; • Oil /fuel leaks and spillages; • Chemical storage, handling and reuse; and • Concrete, cement and grout handling and use.
Standard Good Practice Measures	Construction	Construction works and operation of machinery must be undertaken in accordance with standard good practice measures, including good pre-construction planning, site practices and adherence to relevant guidance for pollution prevention (detailed in **Error! Reference source not found.** of Chapter 11 of the EIAR). This will include, but is not limited to, adherence to the following: • C532: Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors; • GPP 5: Works and maintenance in or near water; • GPP 6: Working at construction and demolition sites; and • GPP 21: Pollution incident response planning
Accident Procedures	Construction	As the impact from accidental spills or leaks of oils and/or chemicals has the potential to be substantial, appropriate procedures are critical to manage this risk and must consider the following: • Water Environment (Controlled Activities) (Scotland) Regulations 2011 General Binding Rule (GBR) 28 and GPP 2 on Above Ground Oil Storage should be implemented to ensure safe storage of fuel, oils and

Mitigation Item/ Category	Timing of Measure	Description
		chemicals. Storage should be sited on an impervious base within a bund and secured. The base and bund walls should be impermeable to the material stored and of adequate capacity. Storage facilities should also incorporate flood resilience measures in consideration of potential extreme sea water levels and/or waves during the construction period. • Appropriate safety precautions must be followed during refuelling activities to minimise the risk of an oil spill. • An Oil Spill Contingency Plan should be provided, which details actions required to stop or minimise a spill and to mitigate its effects. In line with this, emergency spill kits and oil spill containment equipment should be located at strategic locations adjacent to the works.
Dredging Controls / Management	Dredging	Dredging works and disposal of dredge arising must be consistent with the following: • Utilise the most suitable dredging equipment in order to minimise the suspension of any fine sediments and contaminants at the dredge site; • Undertake in a manner that limits, as far as practically possible, the disturbance and dispersion of sediments from the dredger and barges, during dredging operations and transport; • Incorporate appropriate distribution of dredge materials at the disposal site; and • Appropriate timing of operation to avoid or minimise disturbance to marine habitats.
Environmental Clerk of Works (ECoW)	Construction	During the construction period, the Principal Contractor must employ an Environmental Clerk of Works (ECoW), to help ensure that mitigation measures identified through the EIA process, alongside marine and planning conditions, are appropriately implemented and monitored during construction.

Mitigation Item/ Category	Timing of Measure	Description
Benthic Ecology		
N/A	N/A	The potential impacts of the proposed development on benthic ecology will be assessed following completion of the analysis of the results from the benthic and intertidal survey. It is intended that this will form an addendum to the main EIAR and will be submitted in August 2025. This will include assessment against the potential impacts identified in this chapter. As part of the assessment, embedded mitigation will be assessed, alongside operational mitigation and the potential for cumulative effects when considered alongside other committed and reasonably foreseeable projects.
Fish and Shellfish Ecology		
CEMP	Construction	The final CEMP should include soft-start measures for piling operations with reference to fish and shellfish populations.
Operating Machinery	Construction	The adoption of a soft start to impact piling operations will reduce any potential impacts on fish in the vicinity of Stranraer Marina. The application of this protocol allows for the gradual increasing of piling power over a 15 minute timeframe, enabling fish to move from the affected area prior to any injuries being sustained. It is suggested that the Joint Nature Conservation Committee (JNCC) guidelines on minimising the risk of injury to marine mammals are followed; the protocol is designed with marine mammals in mind, though the adoption of a soft start prior to impact piling will also have the effect of helping to minimise the impact of underwater sound on fish.
Operating Machinery	Construction	It is suggested that piling operations are timed to avoid peak fish spawning, likely to occur within Loch Ryan for the relevant receptors (including Priority Marine Features species) between February and June. Whilst impacts from piling operations on fish populations are low as described in Chapter 13 (Fish and Shellfish Ecology), avoidance of underwater noise generation will further help to minimise any detrimental effects on populations.

Mitigation Item/ Category	Timing of Measure	Description
Marine Mammals		
Operating Machinery	Construction	Soft start methods will be applied to all over water piling operations. This method will allow a progressive response and for Fauna to move away from the source of noise over a period of time this will include marine mammals (bird species – as discussed in Chapter 15 of the EIAR) and relevant prey species (fish) as discussed in Chapter 10 of the EIAR.
CEMP	Construction	The construction phase of works will entail extensive over water work involving a range of marine plant. This inevitably introduces construction stage pollution risks, a framework CEMP has been developed and a final CEMP will be prepared to define parameters for biosecurity, pollution spill prevention, spill containment and emergency response.
Marine Mammal Observer	Construction	As described in Chapter 20 (Underwater Noise) the implementation of soft start methods over a 15-minute period will reduce the most significant impacts on Marine Mammals to a zone of influence of <250m. This zone of influence can be monitored by a Marine Mammal Observer (MMO) and where marine mammals within a 500m study area works will be paused until such features have left the study area. A Marine Mammal Observer (MMO) will be appointed to monitor compliance with the requirements of the EIA and the final Construction Environmental Management Plan (CEMP) developed for the construction phase.
ECoW	Construction	An ECoW will be appointed to monitor compliance with the requirements of the EIA and the final CEMP developed for the construction phase. The ECoW will monitor faunal use of the study area and any reactions to construction operations to monitor the effectiveness of construction stage mitigation.

Mitigation Item/ Category	Timing of Measure	Description
Terrestrial Biodiversity and Ornithology		
Timing of Works	Construction / Dredging	Where possible, significant works such as dredging or piling will avoid the over wintering period October – March inclusive. Where this period cannot be avoided, works will avoid the periods 2 hours either side of high tide to minimise potential effects on high tide roosting. To protect spawning Fish no piling or dredging should take place during the late winter period (February – March). Piling and dredging operations will avoid the period April – June inclusive (much of this period will also be avoided for fish spawning reasons see Chapter 13 Fish Ecology). The effect of any sediment plumes on feeding associated with breeding efforts during this period will be minimised. This will avoid key periods when breeding species are tied in to breeding sites surrounding the marina. This will avoid the main breeding period for Black Guillemot which breed in cavities of existing structures.
Operations	Construction	Soft start methods will be applied to all piling operations. This method will allow a progressive response and for fauna to move away from the source of noise over a period of time this will include bird species (marine mammals – as discussed in Chapter 14) and prey items (fish species). As descried in Chapter 20 Underwater Noise and Chapter 14 Marine Mammals soft start will be applied for a 20 minute period for each period of piling activity.
CEMP	Construction	The construction phase of works will entail extensive over water work involving a range of marine plant. This inevitably introduces construction stage pollution risks, and a final CEMP will be prepared to define parameters for biosecurity, pollution spill prevention, spill containment and emergency response.
ECoW	Construction	An ECoW will be appointed to monitor compliance with the requirements of the EIA and final CEMP developed for the construction phase. The ECoW will monitor bird usage of the area and any reactions to construction operations to monitor the effectiveness of construction stage mitigation.

Mitigation Item/ Category	Timing of Measure	Description
Surveys	Pre-construction	Preconstruction surveys for protected or notable species will be required and are recommended 3 months in advance of planned construction work notably in relation to otter. If required, an otter licence and associated mitigation plan will be implemented to mitigate any effects on otter should they be present occupying the study area at the time of works.
Interpretative Boards	Operational Phase	Operational disturbance will arise form a predicted increase in boat use and traffic within Loch Ryan. This effect is difficult to quantify as it will arise through a range of different crafts and users and affect a wide range of species at different times of year. In order to minimise any effect during operation information will be provided through interpretative boards designed for marina users setting out the nature of the species present throughout the year and behaviours which will help to minimise operational disturbance.
Timing of Works	Construction / Dredging	Dredging will avoid the period April – June and therefore the effect of any sediment plumes on feeding associated with breeding efforts during this period will be minimised.
Transportation		
Construction Traffic Management Plan (CTMP)	Construction	The construction stage will be managed by the appointed Principal Contractor, who will through the development and implementation of a Construction Traffic Management Plan (CTMP) reduce construction traffic impacts. The CTMP will ensure movement of Heavy Goods Vehicle (HGV) construction traffic will not occur during the opening, closing and lunchtime periods associated with Primary Schools accessed via the A77 and A717.
CTMP	Construction	The CTMP will be agreed with the D&GC prior to the commencement of construction and will ultimately include details on the following: • Daily and weekly working hours; • Agreed haul routes for incoming materials; • Licensed hauliers to be used; • Disposal sites, if necessary; • Travel arrangements for construction personnel;

Mitigation Item/ Category	Timing of Measure	Description
		• Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network; • Temporary construction entrances to be provided; • Wheel wash facilities if required; • Road cleaning and sweeping measures to be put in place if required; • Temporary construction signage to be put in place and maintained; and • Any proposed traffic management measures such as temporary traffic lights and signage on any public roads.
CTMP / CEMP	Construction	The Construction Programme in conjunction with the CTMP will specifically consider impacts associated with the occupation/closure of required sections of the Coastal Path, to facilitate construction activities within the site. Specific additional mitigation measures will be agreed with the Applicant and Local Planning Authority (LPA) and may include: • a protected route through the construction area, although this would require crossing points to allow for construction activities and vehicles. Physical space is unlikely to be available, particularly to accommodate shared pedestrian / cyclist use along the harbour wall; or • for the Core Paths to be closed during the construction phase and an appropriate temporary diversion route with suitable signage be established through agreement with the planning authority and in discussion with Dumfries and Galloway Council (DGC) Harbours Service, DGC Environment Team (re. core paths), DGC Roads (re. TTRO for closures and diversions), Stranraer Water Sports Association (SWSA) and harbourmaster. Measures are required to support the continued pedestrian access to the harbourmaster facility and routes from the Marine Lake Car Park. Interaction with the HM Coastguard / Solway Coast and Marine Pilot Project (SCAMPP) building construction would be considered. The solutions should be detailed in the CEMP and CTMP.

Mitigation Item/ Category	Timing of Measure	Description
Site Management - Temporary Closure	Construction	During temporary closures of Core Paths, temporary diversion routes should make use of the Market Street footways for pedestrians, which are considered adequate provision to support the transfer trips. To the west of the site, pedestrians can either use the existing footways on Agnew Crescent, leading to Foreland Place to reconnect with the Core Path. Alternatively, access could be provided through Agnew Park.
Travel Plan	Operational Phase	Traffic flow increases could be minimised within Stranraer by encouraging trips by sustainable means such as walking, cycling and public transport. Existing bus and rail services are accessible from Market Street / Harbour Street / Port Rodie and at Stranraer Railway Station, respectively. The local bus stops are located within 800 metre walking distance from the site, whilst rail services can be accessed within approximately 1.2km walking distance from the Marina Access. A site-specific Employee Travel Plan will be implemented at the site which sets out a series of measures to facilitate and encourage a positive modal shift towards more sustainable modes of transport. These measures will be refined based on travel surveys conducted at the occupied development.
Air Quality and Dust		
Communications	Construction	• 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
Dust Management Plan	Construction	Develop and implement a Dust Management Plan (DMP) (which may include measures to control other emissions), approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust.

Mitigation Item/ Category	Timing of Measure	Description
Site Management	Construction	• 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. • Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.
Monitoring	Construction	• Carry out regular dust soiling checks of surfaces such as street furniture, cars and window-sills within 100 m of site boundary. • 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. Commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. A shorter monitoring period or concurrent upwind and downwind monitoring may be agreed by the local authority. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
Preparing and Maintaining the Site	Construction	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Use screening intelligently where possible – e.g. locating site offices between potentially dusty activities and the receptors. • Erect solid screens or barriers around the site boundary. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extended period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean. • 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.

Mitigation Item/ Category	Timing of Measure	Description
		• Depending on the duration that stockpiles will be present and their size - cover, seed, fence or water to prevent wind whipping.
Operating Vehicle/machinery and Sustainable Travel	Construction	• 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. • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Operations	Construction	• 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. • Use enclosed chutes, conveyors and covered skips, where practicable. • 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.
Waste Management	Construction	• Avoid bonfires and burning of waste materials.
Medium Risk Measures Specific to Construction	Construction	• 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.
Medium Risk Measures Specific to Trackout	Construction	• Use water-assisted dust sweeper(s) on the access and local roads, to remove, as soon as practicable any material tracked out of the site. This may require the sweeper being continuously in use.

Mitigation Item/ Category	Timing of Measure	Description
		• 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 practicable. • Record all inspections of haul routes and any subsequent action in a site log book. • 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). • 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.
Operations / Site Management	Construction	It is considered that Non-Road Mobile Machinery (NRMM) emissions on local air quality would likely be 'insignificant' on the basis that the following measures are adopted: • Ensure all equipment complies with appropriate NRMM standards; • Where feasible, ensure further abatement plant is installed on NRMM equipment, e.g. Diesel Particulate Filters; • 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 possible; and • Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).

Mitigation Item/ Category	Timing of Measure	Description
Climate Change		
Good Working Practices/ CEMP	Construction	Good working practices during the construction phase are being defined through a final CEMP which will ensure that, where feasible, emissions associated with the construction of the proposed development are minimised.

Carbon reduction measures	Supply Chain / Pre-Construction	It should be noted that given the location and the use of the proposed development, flexibility regarding material procurement and associated emission reduction is more limited due to additional requirements imposed on the specification of materials for use in the marine environment. Therefore, the following practices will be explored and implemented where feasible to deliver emissions reductions:
		
		• Consideration of low carbon criteria within procurement activities and in partnership with the supply chain through:
		  ○ the preferential procurement of materials with recycled content, lower embodied carbon, use of fewer resources and virgin materials, and use of materials that can be re-used, and recycled or recovered;
		  ○ the use of a sustainability heat map tool to guide procurement decision making towards lower carbon materials and products;
		  ○ completion of a pre-demolition audit to identify existing materials and structures for re-use on-site (i.e. re-use of asphalt within the car park upgrades) and off-site;
		  ○ re-use of dredged material within the reclaimed land area, when consenting allows;
		  ○ sourcing of documents relating to the embodied carbon of the products and services provided (in the form of a Life Cycle Assessment (LCA), Environmental Product Declaration (EPD), or carbon analysis).
		• Working with the supply chain and its partners to reduce emissions during construction through:
		  ○ the requirement for suppliers to have an independently validated Science Based Target in place, or have submitted their Science Based Target Commitment letter (where contracts have a collective value of £5 million or greater per annum) by 2050;
		  ○ the consideration of sustainable practices during the tender process.

Mitigation Item/ Category	Timing of Measure	Description
Site Management – Efficient Construction Practices	Construction	• Efficient construction practices to reduce fuel consumption and associated emissions, including: ○ plant efficiency improvements, such as the use of telematics and/or real-time operator feedback, would be implemented to reduce fuel consumption; ○ use of hybrid generators where feasible, which enable the use of battery storage to make energy supply to site more efficient; ○ use of electric plant and fleet where available, alongside the generation of renewable energy on site to power such plant and construction activities where it is feasible to do so; ○ continuous review of alternative fuels as they become viable for use; ○ where practicable, pre-fabricated elements would be delivered to the site ready for assembly, which will reduce on-site construction waste and reduce vehicle movements as part of the construction process; ○ construction materials should be sourced locally where practicable, to minimise the impact of transportation; ○ vehicles used in road deliveries of materials, equipment and waste arisings on- and off-site would be loaded to full capacity to minimise the number of journeys associated with the transport of these items; ○ all machinery and plant would be procured to adhere with emissions standards prevailing at the time and should be maintained in good repair to remain fuel efficient; ○ when not in use, vehicles and plant machinery involved in site operations would be switched off to further reduce fuel consumption; ○ where possible, local waste management facilities would be used to dispose of all waste arisings, to reduce distant travelled and associated emissions; ○ the volume of waste generated would be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period. Segregated waste storage should be employed to maximise recycling potential for materials; and ○ procedures should be implemented to ensure that staff adhere to good energy management practices, e.g. through turning off lights, computers and heating/air conditioning units when leaving buildings.

Mitigation Item/ Category	Timing of Measure	Description
Noise and Vibration		
CEMP	Construction	Additional mitigation will be required to reduce noise and vibration impacts as to not result in significant adverse effects. Noise and vibration would be primarily managed through the final CEMP developed for the construction phase of the project.
CEMP/ Noise and Vibration Management Plan (NVMP)	Construction	The following measures will be incorporated into the final CEMP, which will include a Noise and Vibration Management Plan (NVMP), and applied by the pre-construction Contractor to control noise and vibration as far as practicable: • Noise and vibration monitoring is undertaken throughout the works, with appropriate trigger levels set to ensure threshold values within BS 5228 are not exceeded. These are to be agreed with DGC; • All vehicles, plant and equipment working within the site shall be fitted with efficient silencers. Position plant as far away from sensitive receptors as possible; • Intermittently operating plant will be shut down in the intervening periods between operations. Start-up plant and vehicles sequentially rather than simultaneously. Avoid unnecessary revving of engines; • Where possible low noise and vibration emitting plant would be selected; • Were reasonably practicable, low vibration working methods should be employed. Isolate equipment using resilient mountings if vibration levels are deemed high; • New plant would be used where practical and regular maintenance undertaken, including maintenance related to noise emissions; • Consideration should be given to use of the most suitable plant, reasonable hours of working for operations which might give rise to perceptible noise and vibrations, and economy and speed of operations; • Care will be taken when erecting or striking Heras fencing to avoid impact noise from banging steel. All operatives undertaking such activities will be instructed on the importance of handling the fencing to reduce noise to a minimum; • Use rubber linings in, for example, chutes and dumpers to reduce impact noise; • Reduce drop heights of materials. Load and unload as far away from sensitive receptors as possible;

Mitigation Item/ Category	Timing of Measure	Description
		• Wherever possible, the use of hydraulic attachments or other means of crushing concrete and hard materials will be used in preference to pneumatic breakers; • Regular liaison with local residents to inform them of operations on site, including periods of temporary operations when noise levels would exceed those normally defined for the site; and • Where vehicle reversing alarms are required, they should be designed to cause the lowest practical environmental impact; preferably they should be directional broadband noise emitters or automatically adjusted to ambient noise levels. At times when the trigger level is being approached, the activity taking place will be reviewed and additional control measures will be implemented as above. When the trigger level has been exceeded, work on site will cease and the activity taking place will be reviewed. Control measures in place will be reviewed and works will be amended as necessary, to ensure noise and vibration levels are below the set trigger level.
Complaints Procedure	Construction	A procedure for complaints will also be included within the final CEMP: • The site manager (or equivalent) will record the details of the complaint, in a log held at the site office; • Any noise or vibration complaint will be immediately investigated, and where necessary, measures will be implemented by the site manager to reduce noise or vibration levels associated with the construction activities responsible for the complaint; • In the event of a noise or vibration complaint, consideration will be given to the nature of the operations which were taking place at the time. As necessary, the relevant operational procedures which caused the complaint will be reviewed and improvements implemented by the site manager. In addition, the wind speed and direction at the time of the complaint will be noted, as this might have contributed to the level of noise received by the complainant; • Complaints will be dealt with immediately, and the timeframe for resolving noise or vibration issues will be 24 hours. Works will be ceased where suitable controls cannot be implemented within 24 hours; • Within 48 hours of receiving the complaint, the complainant will be informed by the Site Manager of the results of the investigation and of what remedial actions have been taken;

Mitigation Item/ Category	Timing of Measure	Description
		• Details of all noise or vibration complaints, and any actions undertaken as a result of investigations, will be recorded by the site manager in the log; and • If justified noise or vibration complaints persist, the site manager will arrange for independent noise or vibration monitoring to be carried out at the location of the complainant to determine the scale and nature of noise or vibration levels received. The results of the noise or vibration monitoring will be independently evaluated to determine if permitted noise or vibration limits have been breached. Based on the findings of the noise or vibration monitoring results, appropriate actions will be taken by the site manager to reduce noise or vibration emissions as appropriate.

Operational Noise Management Plan	Operational	As the uses of the proposed workshops are currently unknown, it is believed appropriate to suggest mitigation, which once operational, will assist in managing noise to avoid the potential for significant adverse effects. Such mitigation, which can be secured through the implementation of an Operational Noise Management Plan, may include:
		
		• Raising awareness to occupants of the proposed development to the impact of noise;
		• Ensuring occupants keep noise generation to a minimum;
		• Avoid noise generating activities at sensitive periods, such as night-time (23:00 to 07:00) and early morning (07:00 to 08:00);
		• Shut doors to premises wherever possible to reduce noise breakout;
		• No idling of vehicles;
		• Complaints process;
		  ○ The Client (or equivalent) will record the details of the complaint, in a log held at the site office.
		  ○ Any noise complaint will be immediately investigated, and where necessary, measures will be implemented by the Client to reduce noise levels associated with the operational activities responsible for the complaint.
		  ○ In the event of a noise complaint, consideration will be given to the nature of the operations which were taking place at the time. As necessary, the relevant operational procedures which caused the complaint will be reviewed and improvements implemented by the Client. In addition, the wind

Mitigation Item/ Category	Timing of Measure	Description
		speed and direction at the time of the complaint will be noted, as this might have contributed to the level of noise received by the complainant. ○ Complaints will be dealt with immediately, and the timeframe for resolving noise or vibration issues will be 24 hours. Works will be ceased where suitable controls cannot be implemented within 24 hours. ○ Within 48 hours the complainant will be informed by the Client of the results of the investigation and of what remedial actions have been taken. ○ Details of all noise complaints, and any actions undertaken as a result of investigations, will be recorded by the Client in the log. ○ If justified noise complaints persist, the Client will arrange for an independent noise investigation to be carried out at the location of the complainant to determine the scale and nature of noise levels received. The results of the noise monitoring will be independently evaluated to determine if permitted noise limits have been breached. Based on the findings of the noise monitoring results, appropriate actions will be taken by the Client to reduce noise emissions as appropriate.
Underwater Noise		
Operations – Soft Start for Piling / Marine Mammal Observer (MMO)	Construction	In terms of impact piling, as discussed in Chapter 20 (Underwater Noise) of the EIAR, a 15-minute soft start for piling can decrease the Auditory Injury (AUD INJ) risk ranges for the VHF group to 250m which is within the often-used 500m exclusion zone practical for observation by a qualified MMO. All other groups have risk ranges shorter than this. A 30-minute soft start will reduce risk ranges further (to ≤190m) and mean that animals outside the northeast pier and breakwater will be outside the risk of AUD INJ. A minimum of 15 minutes' soft start including no observed marine mammal, by a qualified MMO, within 250m for impact piling is thus recommended as mitigation.
Soils, Geology and Contamination		
Personal Protection Equipment (PPE)	Construction	Construction workers should use appropriate personal protection equipment (PPE) and those relevant personnel should follow guidance on the safe redevelopment of contaminated sites as provided in the Health

Mitigation Item/ Category	Timing of Measure	Description
		and Safety Executive (HSE) publication HS (G) 66, 1991, Protection of workers and the general public during the development of contaminated land.
Operations	Construction	A safe system of work will be developed for the construction works/ construction workers alongside the appropriate use of PPE, including personal gas alarms to break any complete ground gas linkage to construction workers.
CEMP	Construction	A CEMP, including pollution prevention measures and construction method statements will be in place during the construction phase. The CEMP will detail mitigation measures to be in place to prevent or minimise negative effects relating to ground conditions, hydrogeology and soils. Pollution prevention measures will include the control of surface water run-off or shallow groundwater / perched water run-off during the works.
Scottish Environment Protection Agency (SEPA) Guidance	Construction	The works on the Site will follow SEPA guidance provided in the applicable pollution prevention guidance notes: • GGP1 'Understanding your environmental responsibilities; • GPP5 'Works and maintenance in or near water; • GPP6 'Working at construction and demolition Sites'; • GPP8 'Safe storage and disposal of oils'; and, • GPP22 'Dealing with spills' .
The Water Environment (Controlled Activities) (Scotland) Regulations 2011	Construction	Measures will also be in accordance with any requirements under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 due to the immediate proximity of the Loch Ryan. These requirements will cover any discharges or abstractions that may be required as well as specific engineering works, with particular attention to silt control and controlling run-off.

Mitigation Item/ Category	Timing of Measure	Description
Spill Kits	Construction	To reduce the impact of spills, spill kits will be available for all plant and operatives will be briefed on what to do in the event of a spill. Fuels will be stored in appropriate containment, such as bunds.
Best Practice Guidance	Construction	Best practice guidance will be followed during the construction of the Site. Mitigation measures would include the use of; silt traps, dust mitigation (dampening down), wheel washing, designated fuelling areas, etc.
Imported Environmental Capping Layer	Construction/ Operational	Given the recorded localised lead exceedance is located in an area of proposed hardstanding, it is considered the pollutant linkage to site end users will be broken and no formal remedial measures are required. However, should the development plan be updated and soft landscaping proposed in this area, an imported environmental capping layer, with a minimum thickness of 450mm clean material, should be installed.
NHBC Guidance – soils	Construction/ Operational	Due to the risk to future plant life, a suitable growing medium will require to be introduced to all future areas of soft landscaping. Whilst not strictly applicable to the proposed end use, reference was made to the NHBC guidance, which recommends a minimum thickness of 300mm thick for growing mediums, comprising of a combination of topsoil and subsoil. The soils to be utilised as a growing medium should be purchased as a product from an approved supplier. Increased capping thicknesses will be required in areas of shrub/tree planting. The thickness and proposed make up to be confirmed with the Landscape Architect going forward. All materials used should satisfy the criteria of BS 3882 and should be tested to confirm it is free from contamination and suitable for use.
Ground Gas Protection Measures	Construction/ Operational	Site specific ground gas protection measures are required to be installed within the proposed development. A combination of the following three types of protection measures are typically used: • Structural barrier of the floor slab, or of the basement slab and walls if basement is present; • Ventilation measures; and • Gas resistant membrane.

Mitigation Item/ Category	Timing of Measure	Description
Concrete Class	Construction/ Operational	Based on the recorded soil sulphate concentrations and pH levels, a concrete class of DS-4/AC-3s is derived[20] is considered appropriate for buried concrete across the site.
Materials	Construction/ Operational	Based on the indicative UKWIR assessment, barrier pipe, wrapped steel and wrapped ductile iron materials may be suitable, however, this will be subject to the results of specific UKWIR testing undertaken on samples retrieved from the formation level of the proposed route of the water supply pipes, once this is known.
Cultural Heritage		
Photographic Record and Written Scheme of Investigation (WSI)	Construction	The 19th century quay wall will be hidden by the proposed sheet pile wall. It is proposed that this be offset through a photographic record. The record will be undertaken in accordance with a Written Scheme of Investigation (WSI) agreed with the GC Planning Archaeologist from Dumfries and Galloway Council (DGC).
Reporting protocol or Protocol for Archaeological Discoveries (PAD)	Construction	A reporting protocol or Protocol for Archaeological Discoveries (PAD) will be developed and agreed with the DGC Planning Archaeologist to allow for the reporting and thereby appropriate recovery and recording of any cultural material encountered during the construction phase below the high-water mark, i.e. marine archaeology.
Temporary Fencing	Construction	Accidental damage to heritage assets, in particular the Harbour Office, during construction will be prevented by measures such as fencing where necessary. These measures will be detailed in the final CEMP.
Landscape and Visual		
CEMP	Construction	A detailed CEMP will be implemented to help alleviate visual effects during the construction phase.

[20] BRE Special Digest 1, Concrete in Aggressive Ground, (3rd Edition), 2005
[23] CIRIA C665, Assessing Risks Posed by Hazardous Ground Gas to Buildings, 2007

Mitigation Item/ Category	Timing of Measure	Description
Socio Economics		
Supply Chain, Skills and Employment Plan	Construction/ Operational	An Outline, Supply Chain, Skills and Employment Plan that ensures employment/training opportunities are offered to Stranraer residents in the first instance.
Educational Boards and Educational Trips	Construction	The inclusion of educational boards on the functionality of the proposed development and offering educational trips to local schools during construction.

Summary and Conclusions

26.5 Table 26.1 above highlights the importance that the final CEMP will have (alongside other mitigation measures e.g. DMP and NVMP) during the construction phase of the proposed development. The final CEMP would be relatively wide ranging in scope to address and minimise potential effects on receptors. A Framework CEMP has been prepared to accompany the application for Planning Permission from the Local Planning Authority (LPA) and for the Marine Licences from Marine Directorate – Licensing Operations Team (MD-LOT).

Abbreviations

AUD INJ	Auditory Injury
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DGC	Dumfries and Galloway Council
DMP	Dust Management Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
HGV	Heavy Goods Vehicle
HSE	Health and Safety Executive
JNCC	Joint Nature Conservation Committee
LPA	Local Planning Authority
MAU	Marine Analytical Unit
MD-LOT	Marine Directorate – Licensing Operations Team
MMO	Marine Mammal Observer
MS-LOT	Marine Scotland – Licensing Operations Team
NPF	National Planning Framework
NRMM	Non-Road Mobile Machinery
PPE	Personal Protection Equipment
SEPA	Scottish Environment Protection Agency
SWSA	Stranraer Water Sports Association
WSI	Written Scheme of Investigation

List of Tables

Table 26.1 Mitigation Schedule