

Chapter 18

Mitigation Measures

18.1 Introduction

Mitigation measures are the measures proposed in order to avoid, reduce or, where possible, remedy the significant adverse environmental effects of the proposed Dursey Island Cable Car and Visitor Centre. Mitigation measures have been incorporated into the design of the proposed development and will be applied during both the construction and operation phase where they have been assessed as necessary.

This chapter provides a summary of the mitigation measures for the proposed Dursey Island Cable Car and Visitor Centre as contained within chapters 5 – 17 of the Environmental Impact Assessment Report (EIAR). This is a summarised version stating only the mitigation measures to be provided and does not discuss the requirement for the measure to be applied or the residual impacts. This chapter also deals only with mitigation measures to be applied to the proposed Dursey Island Cable Car and Visitor Centre and does not address the avoidance or reduction mitigation which has been applied through the design development.

18.2 General Mitigation and Monitoring Measures

Table 18.1 General Mitigation and Monitoring Measures

No.	Description
1.1	<p>Construction Environmental Management Plan</p> <p>Prior to any demolition, excavation or construction a Construction Environmental Management Plan (CEMP) will be produced by the successful contractor for the proposed development. The CEMP will set out the Contractor's overall management and administration of a construction project. An Outline CEMP has been prepared as part of this EIAR (see Appendix 4.1b). The CEMP will be developed by the Contractor during the pre-construction phase to ensure commitments included in the statutory approvals are adhered to. The Contractor will include details in relation to all of the following in the CEMP</p> <ul style="list-style-type: none"> • Details of working hours and days; • Details of emergency plan - in the event of fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for: Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services; • Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages); • Details of construction plant storage, temporary offices; • A Traffic Management Plan (to be developed in conjunction with the Local Authority's Roads Section) including details of routing of network traffic; temporary road closures; temporary signal strategy; routing of construction traffic; programme of vehicular arrivals; on-site parking for vehicles and workers; road cleaning; other traffic management requirements; • Truck wheel wash details (including measures to reduce and treat runoff); • Dust management to prevent nuisance (demolition and construction); • Site run-off management; • Noise and vibration management to prevent nuisance (demolition and construction); • Landscape management;

No.	Description
	<ul style="list-style-type: none"> • Management of contaminated land including asbestos and lead-based paint and assessment of risk for same by suitably qualified, trained and licenced personnel; • Management of demolition of all structures and assessment of risks for same; • Stockpiles; • Project procedures & method statements for: <ul style="list-style-type: none"> ○ Site clearance, site investigations, excavations and working with asbestos containing materials (ACMs) if necessary; ○ Management and removal of ACMs if necessary; ○ Demolition and removal of buildings, services, pipelines (including risk assessment and disposal); ○ Diversion of services; ○ Excavation and blasting (through peat, soils and bedrock); ○ Construction of pipelines; ○ Temporary hoarding & lighting; ○ Borrow pits and location of crushing plant; ○ Disposal of surplus geological material (peat, soils, rock etc.); ○ Earthworks material improvement; and ○ Protection of watercourses from contamination and silting during construction; and ○ Site Compounds. <p>The production of the CEMP will also detail areas of concern with regard to health and safety and any environmental issues that require attention during the construction phase. The adoption of good management practices listed in the CEMP during the construction phase will contribute to reducing environmental impacts.</p>
1.2	<p>Environmental Operating Plan</p> <p>The Environmental Operating Plan (EOP) is defined as a document that outlines procedures for the delivery of environmental mitigation measures and for addressing general day-to-day environmental issues that can arise during the construction phase of a construction project. Essentially the EOP is a project management tool. It is prepared, developed and updated by the Contractor during the project construction stage and sets out mitigation measures proposed by the EIAR, NIS and An Bord Pleanála's decision. An Outline EOP has been included in Appendix 4.1 of this EIAR and will be further developed by the Contractor.</p> <p>Before any works commence on site, the Contractor will be required to prepare an EOP in accordance with the National Roads Authority (NRA), now known for operational purposes as Transport Infrastructure Ireland (TII), guidance document <i>Guidelines for the Creation and Maintenance of an Environmental Operating Plan</i>. Details within the plan will include:</p> <ul style="list-style-type: none"> • All environmental commitments and mitigation measures included as part of the planning approval process and any requirements of statutory bodies such as the National Parks and Wildlife Service (NPWS) as well as a method documenting compliance with the measures; • A list of all applicable environmental legislation requirements and a method of documenting compliance with these requirements; and • Outline methods by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment. <p>To oversee the implementation of the EOP, the Contractors will be required to appoint a person to ensure that the mitigation measures included in the EIAR, the EOP and the statutory approvals are executed in the construction of the works and to monitor</p>

No.	Description
	that those mitigation measures and planning conditions are functioning properly. The EOP integrates the requirements of the Incident Response Plan (IRP), the Construction Environmental Management Plan (CEMP) and the Construction and Demolition Waste Management Plan (CDWMP), which are described in turn in the following sections.
1.3	<p>Construction and Demolition Waste Management Plan (CDWMP)</p> <p>The Construction and Demolition Waste Management Plan (CDWMP) will clearly set out the Contractor's proposals regarding the treatment, storage and disposal of waste related to the construction of the proposed development. An Outline CDWMP has been prepared for the proposed development (see Appendix 4.1c). The Outline CDWMP is a live document that will be amended and updated to reflect current conditions on site as the project progresses. The obligation to develop, maintain and operate a CDWMP will form part of the contract documents for the project. The plan itself will contain, but not be limited to, the following measures:</p> <ul style="list-style-type: none"> • Details of waste storage to be provided for different waste; • Details of where and how materials are to be disposed of - landfill or other appropriately licensed waste management facility; • Details of storage areas for waste materials and containers; • Details of how unsuitable excess materials will be disposed of where necessary; and • Details of how and where hazardous wastes such as oils, diesel and other hydrocarbon or other chemical waste are to be stored and disposed of in a suitable manner.

18.3 Mitigation and Monitoring Measures for Traffic and Transport

Table 18.2 Mitigation and Monitoring Measures for Traffic and Transport

No.	Description
2.1	No mitigation measures for traffic and transport are deemed necessary. No significant impacts are predicted as standard best practice measures are incorporated into the project design.

18.4 Mitigation and Monitoring Measures for Population and Human Health

Table 18.3 Mitigation and Monitoring Measures for Population and Human Health

No.	Description
3.1	The Contractor shall undertake a more detailed asbestos survey prior to the commencement of works.
3.2	<p>A Construction Environmental Management Plan (CEMP) shall be developed by the Contractor in agreement with the location authority, prior to the commencement of works. As stated in Chapter 4, the CEMP should address any potential risks related to working nears asbestos and lead-based paint. This document shall also include a Dust Management Plan, including the following measures to prevent adverse effects related to lead-based paints:</p> <ul style="list-style-type: none"> • A HEPA-filter vacuum shall be employed to clean up debris resulting from the removal (accidental or otherwise) of paints on the structures in question. • Where paint removal is required, a wet-based method shall be applied.

No.	Description
	<ul style="list-style-type: none"> • Any paint debris shall be disposed of in accordance with the Waste Management Act. • All personnel engaged in the removal of (or otherwise working on or near) structures which have been determined to be coated with lead-containing paint shall wear appropriate protective clothing.
3.3	A Stakeholder Management and Communication Plan shall be developed by the Contractor in agreement with Cork County Council prior to the commencement of the construction phase. It shall include measures addressing the communication of information to local residents, those working in the area, businessowners and visitors regarding the nature and duration of works to be carried out. The Plan shall be implemented throughout the duration of the construction works.
3.4	All of the mitigation measures set out in Chapters 7, 9, 10, 12 and 13 of this EIAR are required to be implemented.
3.5	<p>When restrictions/changes to the operation of the cableway are required the Contractor shall be required to:</p> <ul style="list-style-type: none"> • Provide written notice and/or verbal notice to all Dursey Island residents and landowners at least 1 week prior to the first day of the interruption, or as soon the interruption is known. • In the event of emergency situations, the contractor will be required to notify the 2 Dursey Island residents and landowners immediately or as soon as is practicable by phone/in person and in writing to notify them of changes to the operation of the cableway. • Provide up to date notifications to the general public about any interruptions to the service via a webpage set up for the purpose on the site website (for example on: DurseyIsland.ie). The notification(s) should include details regarding the nature of the interruption (i.e. whether the cableway is partly operational or fully out of service) and the duration of the interruption.

18.5 Mitigation and Monitoring Measures for Biodiversity

Table 18.4 Mitigation and Monitoring Measures for Biodiversity

No.	Description
4.1	A Construction Environmental Management Plan (CEMP) shall be developed by the Contractor prior to the commencement of works. This document serves to ensure that the construction of the proposed development does not lead to any unanticipated negative impacts on the environment. It shall be developed in accordance with the description of the CEMP set out in Chapter 4 of this EIAR – Description of the Proposed Development – and based on the Outline CEMP which has been included in Appendix 4.1 of this EIAR.
4.2	An Environmental Operating Plan (EOP) shall be developed by the Contractor prior to the commencement of works. This document sets out the protocol for addressing environmental issues which may arise during the construction phase. This document shall be developed in accordance with the TII (n.d.; formerly NRA) guidelines, ' <i>Guidelines for the Creation and Maintenance of an Environmental Operating Plan</i> ' and based on the Outline EOP which has been included in Appendix 4.2 of this EIAR.
4.3	The Contractor will appoint a Site Environmental Manager prior to the commencement of works. This person shall be responsible for carrying out environmental monitoring and ensuring that the mitigation measures proposed in this EIAR (as well as the CEMP and EOP) are adhered to.
4.4	An Ecological Clerk of Works (ECoW) shall be appointed by CCC prior to the commencement of works. It shall be their responsibility to supervise and provide

No.	Description
	recommendations on the execution of any and all works which have the potential to give rise to negative effects on biodiversity/ecological integrity.
4.5	<p>In order to prevent/minimise potential negative effects as a result of the introduction and/or spread of terrestrial and aquatic IAS during the construction of the proposed development:</p> <ul style="list-style-type: none"> • An IAS Management Plan [Appendix 7.1] has been developed and shall be implemented, as required, during the construction of the proposed development. • Landscaping of the proposed development shall use native species of plants of national provenance only and, insofar as possible, soil reused from on-site excavations. If soil/substrate needs to be imported to the site for the purposes of the proposed development, the Contractor shall ensure that the imported soil/substrate is free from IAS. • All land-based construction works shall be executed in accordance with the TII guidelines, '<i>Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads</i>' (2010). The Contractor shall ensure that the hull of the vessel(s) used during proposed works is not fouled with any IAS prior to its arrival at the site. Efforts shall also be made to ensure that any plant/equipment (including PPE equipment) is not carrying seeds or plant materials from IAS. The Contractor shall refer to the Invasive Species Ireland '<i>Marina Operators Code of Conduct</i>' (Kelly & Maguire, 2009).
4.6	<p>In order to prevent any potential destruction of betony (<i>Betonica officinalis</i>) as a result of the construction of the proposed development, a pre-construction survey shall be carried out of the site of the proposed development, and any plants/clusters of plants of the species identified in vulnerable locations (i.e. where they are at risk of destruction as a result of the proposed works) shall be translocated under NPWS license by a suitably qualified, competent professional to area(s) where the destruction of the plants will be avoided. Additionally, if individual plants or clusters of betony (in addition to those already identified and translocated) are identified by the ECoW at vulnerable location(s) during the construction phase, they shall be translocated as described previously. If necessary, works at the location(s) in question shall be suspended until such time that it is considered ecologically appropriate (by the ECoW) to carry out translocations.</p>
4.7	<p>In order to prevent significant, negative effects on bats as a result of the construction of the proposed development:</p> <ul style="list-style-type: none"> • Demolition of existing buildings at the site of the proposed development shall be completed either during the autumn or spring months in order to minimise the risk of disturbance of roosting bats. Care shall be taken during the removal of rooves. If bats are identified in structures during demolition works, the local NPWS Conservation Ranger shall be contacted to facilitate safe translocation. • Bat boxes shall be erected in association with buildings/structures on the mainland side of the site of the proposed development. These shall be of a design and placement that is in accordance with the Bat Conservation Ireland guidelines, '<i>Bat Boxes: Guidance Notes for: Agri-environmental Schemes</i>' (Bat Conservation Ireland, 2015) and the NRA guidelines, '<i>Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes</i>' (TII, n.d.). Bat boxes shall be inspected, maintained and relocated (if required) in accordance with the TII guidelines. Boxes shall be incorporated into or onto external walls away from artificial lighting. Recommended units (all available at nhbs.com) are as follows: <ul style="list-style-type: none"> ○ 8 no. 2FE Schwegler Wall-mounted Bat Shelter (to be hung on external walls), or ○ 6 no. 1FE Schwegler Bat Access Panel (with back plate) (to be hung on external walls), or ○ 4 no. 2FR Schwegler Bat Tube (to be built into external walls), or

No.	Description
	<ul style="list-style-type: none"> ○ 4 no. 1FQ Schwegler Bat Roost (to be hung on external walls).
4.8	<p>In order to prevent pollution of the marine environment and surface-groundwater during the construction of the proposed development, which could potentially give rise to negative effects on biodiversity in marine and freshwater aquatic habitats, all of the mitigation measures outlined in Chapters 8, 9 and 10 of this EIAR – Soils & Geology, Hydrogeology and Hydrology, respectively – shall be implemented.</p>
4.9	<p>In order to prevent/minimise potential negative effects as a result of the introduction and/or spread of terrestrial and aquatic IAS during the operation of the proposed development:</p> <ul style="list-style-type: none"> • CCC shall commit to undertaking treatment by a competent professional, in accordance with the recommended physical treatment set out in Appendix 7.1, with a view to eradicating the occurrence of hottentot-fig on Dursey Island prior to the commencement of operation of the proposed development (subject to agreement with the landowner). Monitoring shall be carried out by a competent professional for five years to ensure no re-growth occurs. • An IAS Management Plan [Appendix 7.1] has been developed and shall be implemented during the operation of the proposed development, with the objectives of, (i) where possible, eradicating IAS (especially on Dursey Island), (ii) preventing the introduction of new IAS to the area (especially Dursey Island), and (iii) in all other instances, managing existing occurrences of IAS with a view to preventing their spread.
4.10	<p>Three looped, waymarked walking trails (as set out in Plate 7.17) shall be formalised on Dursey Island prior to the commencement of the operation of the proposed development. This approach is widely used in outdoor recreation areas (Slaymaker, 2017). According to the National Trails Office (NTO) <i>'Guide to Planning and Developing Recreational Trails in Ireland'</i>, (2012, p.4), <i>"Developing recreational trails is a very effective way of managing recreational activity in the outdoors and protecting the natural environment"</i>. Indeed, research indicates that walkers tend to stick to established paths, even when they have the 'right to roam' (Keirle & Stephens, 2004; Syngé, 2004; Kuba <i>et al.</i>, 2018).</p> <p>Formalisation of these trails shall not involve the creation of new paths, but rather the formal waymarking of routes on existing roads and paths. Formalisation of these paths shall involve the following:</p> <ol style="list-style-type: none"> 1. Placement of suitably spaced colour-coded waymarker posts of recycled plastic, featuring directional arrows, at appropriate locations along the existing routes set out in Plate 7.18 in Chapter 7 of this EIAR; 2. Erection of a mapboard at a clearly visible location at the trailhead (i.e. on CCC lands near the island-side cable car station) displaying a map of colour-coded routes with: <ol style="list-style-type: none"> i. approximate length (km), ii. duration (hours/minutes), iii. a conservative estimate of difficulty level from 'Easy' to 'Moderate' to 'Strenuous' to 'Very Difficult' (according to the NTO guidelines, <i>'Classification and Grading for Recreational Trails'</i> (2008)), and iv. a message instructing walkers to stay on the trails (according to the recommendations set out in Appendix 7.2, <i>'Design of Outdoor Signage'</i>); 3. Erection of 'minimum impact behaviour' (MIB) signage at key sensitive locations for chough and/or habitat conservation along trails. Research from Portugal has shown that erection of such signage can effectively reduce the impact of human disturbance on breeding little tern (<i>Sterna albifrons</i>), with a 34-fold greater likelihood of breeding success at nest sites with such protective measures in place (Medeiros <i>et al.</i>, 2007). At a minimum, this MIB signage shall include:

No.	Description
	<ul style="list-style-type: none"> i. a note on the trailhead mapboard instructing visitors to stay on the trails; and ii. a sign at the western end of the Tillickafinna/Signal Tower Loop instructing walkers not to venture any further westward onto the chough 'hotspot'. The design of this signage shall be in accordance with the recommendations set out in Appendix 7.2, 'Design of Outdoor Signage'. <p>Research conducted on Bear Island, Maryland, U.S.A. (Hockett <i>et al.</i>, 2010), found that principle reasons for visitors to leave the established trail were:</p> <ul style="list-style-type: none"> i. to view and/or photograph a scenic vista; ii. to pass other walkers on the trail; iii. to avoid challenging trail conditions; and also iv. because of poor waymarking. <p>Accordingly, trails should offer opportunities for scenic vistas/photos, should be well marked and should not be too challenging. The direction of all three looped trails shall be anticlockwise, with walkers travelling along the established off-road trails on the outbound journey, and returning to the trailhead via the public road on the return journey. Travelling in this direction, walkers undertaking the Tillickafinna/Signal Tower Loop will have had plenty of 'photo opportunities', and will have completed the most strenuous portion of the trail (the 'high route') by the time they reach Tillickafinna and, for these reasons, may feel less inclined to venture further westward. As stated previously, formalisation of these trails shall not involve the creation of any new paths but rather, will serve to encourage walkers to stay on existing, established paths/roads, and provide options for walkers of varying abilities. Provision of complete (and conservative) information on the nature and duration of routes, coupled with the provision of two shorter options, may discourage certain walkers from attempting the full loop and travelling to the western end of the island. Any existing signage which contradicts these trails shall be removed, as required. CCC shall be responsible for the maintenance of these trails for the duration of the operation of the proposed development.</p> <p>Additionally, an existing informal walking trail on Crow Head shall be more clearly marked using recycled plastic waymarkers. However, no sign (or other indicator which might draw attention to the walk) should be erected. Responses to the visitor survey indicate that this is not a very popular walk and no undue attention should be drawn to it. Instead, efforts should be made to control the movements of those few walkers who do venture onto the headland. This approach is supported by success elsewhere. In the Hohe Tauern National Park in Austria, for example "<i>Staff have found that without a trail, people wander in all directions, but if there is a clear and unmistakable path, nearly all stick to it</i>" (Synge, 2004). CCC shall be responsible for the maintenance of this trail.</p>
4.11	<p>An education campaign shall be launched to inform visitors of the sensitivity of (i) species (i.e. choughs and ground-nesting bird species) to human disturbance and (ii) habitats to degradation as a result of visitor footfall. The objective of the campaign is to discourage visitors from wandering off the established walking routes on the island, particularly at sensitive locations for chough (i.e. at the western end of the island and potential roost sites). The campaign shall have the following characteristics:</p> <ul style="list-style-type: none"> • It shall be three-tiered in that it will be featured in: <ul style="list-style-type: none"> 1. Exhibition materials in the Visitor Centre; 2. An audiovisual presentation in the outbound journey of the cable cars; and 3. Outdoor signage on Dursey Island. • The educational materials used shall be aesthetically pleasing and emotionally engaging to encourage buy-in from visitors. The design of outdoor signage shall be in accordance with the recommendations set out in Appendix 7.2 <p>All outdoor signage shall be designed for the exposed and corrosive nature of the site.</p>

No.	Description
4.12	Not including island residents/farmers, no more than 12,835 persons shall be permitted to travel to Dursey Island in any month of the year during the operation of the proposed development (see Appendix 7.2). This numerical carrying capacity shall be implemented using a strictly enforced CCC ticketing system.
4.13	Not including guide dogs, pets and/or working dogs of island residents and farmers, dogs shall be prohibited from travelling to Dursey Island. This restriction will be clearly displayed on the Dursey Island Cable Car and Visitor Centre website and promotional materials.
4.14	Not including bicycles for the personal use of island residents/farmers, visitors shall be prohibited from bringing bicycles to the island in the cable cars. This restriction will be clearly displayed on the Dursey Island Cable Car and Visitor Centre website and promotional materials.
4.15	Insofar as is possible in view of safety requirements, lighting shall be turned off at the closure of the proposed development each night (i.e. once all visitors have left).
4.16	Bulbs used in outdoor lighting shall be of a type which does not emit ultraviolet (UV) light. No spotlights shall be used.
4.17	In order to prevent pollution of the marine environment and surface-groundwater during the operation of the proposed development, which could potentially give rise to negative effects on biodiversity in marine and freshwater aquatic habitats, all of the mitigation measures outlined in Chapters 8, 9 and 10 of this EIAR – Soils & Geology, Hydrogeology and Hydrology, respectively – shall be implemented.
4.18	In order to minimise the volume of litter being discarded on Dursey Island and in the vicinity of the proposed development on the mainland, segregated waste bins (at a minimum, separate recycling and residual waste bins) shall be provided in the mainland-side Visitor Centre, café and at the island station. To prevent overflow, these bins shall be emptied regularly. An appropriate waste collection service shall be arranged by CCC.
4.19	<p>In order to support environmentally sustainable development and management of future developments on the west coast – particularly of tourism and recreation-related developments – CCC shall commit to implementing a 10-year monitoring scheme at the site of the proposed development, including the following:</p> <ol style="list-style-type: none"> 1. Monitoring of visitor movements and activities in the vicinity of the proposed development, involving the following methods: <ul style="list-style-type: none"> • Trail counters shall be installed at suitable locations on walking trails on Dursey Island, on the Garinish Loop walk and on the walk at Crow Head. On Dursey Island, a trail counter shall be placed at an appropriate location on the western end of the island, so as to record approximately how many visitors leave the established trail (disregarding the MIB sign) to wander onto this key area for chough. CCC shall be responsible for the maintenance of these counters. • A visitor survey shall be carried out on an annual basis, to establish approximately how visitors respond to MIB signage, what proportion of visitors follow each of the three looped trails, and what proportion of visitors remain on established trails and vice versa. 2. The conservation status of the Dursey Island chough population shall be monitored on an annual basis (during the breeding season). The monitoring programme in question shall, at a minimum, involve the measurement (by a suitably qualified and competent ecologist) of the following parameters: <ul style="list-style-type: none"> • Number of breeding pairs (confirmed, probable and possible); • Locations of nest sites; and • Productivity of population.

No.	Description
	<p>3. The conservation status of the habitats on Dursey Island shall be monitored on an annual basis. The monitoring programme in question shall, at a minimum, involve identification (by a suitably qualified and competent ecologist) of any areas where the ecological integrity of habitats is being negatively affected by land use (especially grazing regime) and/or any other pressures/threats.</p> <p>The data gathered as a result of all monitoring undertaken shall be shared with Fáilte Ireland so that it can feed into their WAW Environmental Surveying and Monitoring Programme, and can inform the development and management of similar/related developments, plans and projects. Information should also be shared with NPWS and, upon request, and as appropriate, with research institutions and state authorities. Results of monitoring shall be analysed and conclusions drawn in terms of management implications for developments of a similar nature/environmental context.</p>

18.6 Mitigation and Monitoring Measures for Soils and Geology

Table 18.5 Mitigation and Monitoring Measures for Soils and Geology

No.	Description
5.1	<p>The bedrock excavated on site will be reused as fill to structures, below the structures' floor slab where the slab is above the existing ground level, and to level the parking area. The laboratory tests carried out on rock samples confirm that the rock won on site can be used for structures' fill purposes in accordance to Specifications for Road Works. The majority of the excavated bedrock will be reused on site and there will be very limited and/or no need for off-site disposal. The design also ensures that the cut and the fill requirements are balanced, so that only small volumes of imported fill will be required.</p>
5.2	<p>Stripped topsoil will be temporarily stored and reused throughout the development area, for instance over the currently paved area next to the existing station.</p>
5.3	<p>A geotextile screen and boom with oil barrier will be required around the perimeter of the construction works to prevent the runoff of silt, oil or other deposits generated by construction activities.</p>

18.7 Mitigation and Monitoring Measures for Hydrogeology

Table 18.6 Mitigation and Monitoring Measures for Hydrogeology

No.	Description
6.1	<p>A project-specific Environmental Operating Plan (EOP) will be prepared for the development. It will be maintained by the Contractor for the duration of the construction phase. The EOP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the procedures. As a minimum, the EOP for the proposed development will be formulated in consideration of the standard best practice. The EOP will include a range of site-specific measures which include:</p> <ul style="list-style-type: none"> • <i>Earthworks shall be carried out such that surfaces promote runoff and prevent ponding and flooding.</i> • <i>Runoff will be controlled and treated to minimise impacts to surface and groundwater.</i> • <i>All hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents. Temporary bunds for oil/diesel storage tanks will be used on the site during the construction phase.</i>

No.	Description
	<ul style="list-style-type: none"> • <i>Safe materials handling of all potentially hazardous materials will be emphasised to all construction personnel employed during construction.</i> • <i>Mitigation measures during the construction phase will include implementing best practice during excavation works to avoid sediment entering the Atlantic Ocean (Kenmare River SAC).</i>
6.2	All other potential impacts have been identified as slight in the operational phase and as such no long-term mitigation measures are proposed.
6.3	A maintenance agreement shall be entered into between the operator of the site and a suitably qualified wastewater provider for both On-Site Wastewater Treatment Systems. This maintenance agreement shall include for regular checks, up-keep and maintenance and on-going desludging.
6.4	All conditions of the Groundwater Discharge Licence (once granted) shall be adhered to in full including any and all compliance monitoring specified.

18.8 Mitigation and Monitoring Measures for Hydrology

Table 18.7 Mitigation and Monitoring Measures for Hydrology

No.	Description
7.1	Site works will be limited to the minimum required to undertake the necessary elements of the project;
7.2	As far as is practicable, construction works shall proceed within predetermined Construction Areas on a phased basis. These areas will be determined by the contractor during the construction phase of the project.
7.3	Surface water flowing onto the construction area will be minimised through the provision of berms, diversion channels or cut-off ditches.
7.4	Management of excess material stockpiles to prevent siltation of watercourse systems through runoff during rainstorms will be undertaken. This may involve allowing the establishment of vegetation on the exposed soil and the diversion of runoff water from these stockpiles to the construction settlement ponds.
7.5	Protection of waterbodies from silt load will be carried out through the use of timber fencing with silt fences or earthen berms to provide adequate treatment of runoff to surface waterbodies.
7.6	Settlement ponds, silt traps and bunds will be used. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap.
7.7	The anticipated site compound/storage facilities will be fenced off at a minimum distance of 10m from the top of the edge of the sea/cliff edge. Any works within the 10m buffer zone will require measures to be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to the sea/watercourse. See the OCEMP within the EOP in Appendix 4.1.
7.8	Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance with the NRA/TII document "Guidelines for the crossing of watercourses during the construction of National Road Schemes". All chemical and fuel filling locations will be contained within bunded areas and set back a minimum of 20m from watercourses.
7.9	Foul drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent pollution.

No.	Description
7.10	The construction discharge will be treated such that it will not reduce the environmental quality standard of the receiving waterbodies.
7.11	Riparian vegetation (if present) along the minor watercourse will be fenced off at a distance of 3m either side of the proposed crossing point to provide a buffer zone for its protection.
7.12	Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water.
7.13	When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used.
7.14	Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters.
7.15	Placing of concrete near surface waterbodies will be carried out only under the supervision of the Ecological Clerk of Works (ECoW).
7.16	There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering surface waterbodies.
7.17	Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses and lakes.
7.18	On-site concrete batching and mixing activities will only be allowed at the identified construction compound areas.
7.19	Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the manufacturer).
7.20	Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival to site.
7.21	Chute washout locations will be provided with an appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.
7.22	The risk to the groundwater supply will be mitigated by restricting the use of the existing groundwater well as a potable water supply during construction. Instead potable water shall be brought to site. In addition, with the application of standard construction methods, the EOP and mitigation measures detailed in this chapter, any impacts to water supply and quality are found to be unlikely and temporary in nature. Therefore, there is a slight impact on human health during the construction phase. Physico-chemical groundwater quality monitoring will be undertaken prior to and post construction.
7.23	The proposed surface water drainage system will comprise predominantly SuDS features which will attenuate and treat the surface water runoff from the site prior to discharge to sea. Permeable paving will allow infiltration to the underlying subsoils.
7.24	In the event of a pump failure at the proposed foul pumping station, mitigation measures have been proposed. The pumping station has been designed to provide 24-hour effluent storage in case of failure. Standby pumps will also be provided.

No.	Description
7.25	The proposed surface water drainage system will comprise predominantly SuDS features which will attenuate and cleanse the surface water runoff from the site prior to discharge to sea by percolation into the subsoil. The incorporation of a SuDS based approach will ensure that discharge will be controlled, and treatment of runoff will take place within the SuDS components.
7.26	The proposed retaining wall drainage will incorporate a hydrocarbon separator prior to discharging to the minor watercourse. The implementation of this mitigation measure will reduce the associated impact from slight/moderate to slight. Physio-chemical water quality monitoring will be undertaken at the outfall location prior to and post construction.
7.27	All rainwater outlets including sinks and faucets will bare clear warnings as to the hazard posed by rainwater consumption.
7.28	<p>It is envisaged that surface water sampling and chemical testing will be undertaken immediately downstream of the proposed outfall location in the minor watercourse. Surface water samples will be tested for physical and chemical parameters to assess water quality and indicate possible contamination at the site. The water samples will be tested for the following parameters:</p> <ul style="list-style-type: none"> • Biochemical Oxygen Demand (BOD); • Chemical Oxygen Demand (COD); • pH value; • Suspended Solids; • Total Coliforms; • Ammonia; • Nitrate; • Nitrite; • Ortho Phosphate; and • Hydrocarbons. <p>The surface water monitoring regime will be undertaken prior to, during and after completion of the proposed works. Samples will be taken at fortnightly intervals from the minor watercourse with a minimum of 4 samples taken prior to the works and 6 samples taken after completion of the works.</p>
7.29	Groundwater sampling will also be undertaken prior to, during and after completion of the proposed works from the existing and proposed groundwater well. Samples will be taken at fortnightly intervals from each well with a minimum of 4 samples taken prior to the works and 6 samples taken after completion of the works. The groundwater samples will be tested for a range of physical and chemical parameters (as listed in Mitigation Measure 7.28 above) in order to assess water quality and indicate possible contamination at the site.

18.9 Mitigation and Monitoring Measures for Landscape and Visual

Table 18.8 Mitigation and Monitoring Measures for Landscape and Visual

No.	Description
8.1	Removal of cable car platform, building and hard surfacing, on the mainland side to be carried out, and the natural regeneration of area around the existing cable car station on the mainland side is to be facilitated. This is to be carried out by appropriate storage of topsoil to avoid compaction during construction, and the soil re-spread following construction. No seeding other than a sowing of red fescue to re-establish surface covering is to be carried out.

No.	Description
8.2	The proposed development has been designed to minimise cut and fill, and to sit the development into the landscape, working with the topography where possible.
8.3	Built form is low to blend into the landscape.
8.4	Natural materials and weathered steel are used to blend the buildings into the landscape.
8.5	The new visitor car park is presented at two levels to minimise cutting and thus optimise integration in the landscape. The parapet style walls which are provided to screen vehicles will be finished out with natural stone to reflect the local drystone walling styles. The parking spaces are to be finished out with a reinforced grass system which will have a softening green effect on these significant spaces.
8.6	The landscape plan for the mainland site indicates a simple approach with minimal intervention, indicating surface treatments which will include natural stone paving, exposed aggregate, and native planting to the scheme.
8.7	Further softening of the hard surfaced areas and car park with vegetation (small trees/shrubs, climbers etc. and walls can be explored at detailed design stage to further reduce the visual effects of the large areas of hard surface.
8.8	The green roof to the energy building slightly reduces the hard surface area.

18.10 Mitigation and Monitoring Measures for Noise and Vibration

Table 18.9 Mitigation and Monitoring Measures for Noise and Vibration

No.	Description
9.1	With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228:2009 +A1 2014, <i>Code of Practice for Noise and Vibration Control on Construction and Open Sites - Parts 1 and 2</i> . It is expected that the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary, in order to ensure effects on nearby residential noise-sensitive locations are not significant.
9.2	No plant used on-site will be permitted to cause an ongoing public nuisance due to noise.
9.3	The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on-site operations.
9.4	All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
9.5	Compressors used will be attenuated models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever machines are in use, and all ancillary pneumatic tools shall be fitted with suitable silencers.
9.6	Machinery that is used intermittently will be shut down or throttled back to a minimum level when not in use.
9.7	The contractor will manage the works so as to comply with noise limits outlined in BS 5228-1: 2009 + A1 2014, <i>Part 1 – Noise</i> .
9.8	All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
9.9	Limiting the hours during which site activities which are likely to create high levels of noise or vibration are permitted.

No.	Description
9.10	Monitoring levels of noise and vibration during critical periods and at sensitive locations.
9.11	Establishing channels of communication between the contractor/developer, Cork County Council and residents so that receptors are aware of the likely duration of activities likely to generate higher noise or vibration.
9.12	The Contractor shall appoint a Site Environmental Manager (SEM) who is responsible for matters relating to noise and vibration.
9.13	Selection of plant with low inherent potential for generation of noise and/or vibration.
9.14	Erection of good quality, printed site hoarding around the South Quays which will act as a noise barrier to general construction activity at ground level.
9.15	Erection of barriers as necessary around items such as generators or high duty compressors.
9.16	Situate any noisy plant as far away from sensitive properties as permitted by site constraints.
9.17	Normal working times will be 07:00 to 19:00hrs Monday to Friday and 08:00 to 16:30hrs Saturday and Sunday. Works will not be undertaken outside these working hours without the written permission of Cork County Council.
9.18	During the operational phase of the development, noise from building services equipment serving the Visitor Centre will be selected such that the noise emission does not exceed 85dB(A) at 1m from the plant item.

18.11 Mitigation and Monitoring Measures for Air Quality and Climate

Table 18.10 Mitigation and Monitoring Measures for Air Quality and Climate

No.	Description
10.1	The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust management plan.
10.2	Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
10.3	Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.
10.4	Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.
10.5	Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates.
10.6	Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
10.7	Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.
10.8	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.
10.9	During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

No.	Description
10.10	A High Efficiency Particulate Air (HEPA)-filter vacuum shall be employed to clean up debris resulting from the removal (accidental or otherwise) of paints on the structures in question.
10.11	Where paint removal is required, a wet-based method shall be applied.
10.12	Any paint debris shall be disposed of in accordance with the Waste Management Act.
10.13	All personnel engaged in the removal of (or otherwise working on or near) structures which have been determined to be coated with lead-containing paint shall wear appropriate protective clothing.
10.14	In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.
10.11	On-site or delivery vehicles will be prevented from leaving engines idling, even over short periods.
10.12	Waste of materials due to poor timing or over ordering on site will be minimised to reduce the embodied carbon footprint of the site.

18.12 Mitigation and Monitoring Measures for Archaeological and Cultural Heritage

Table 18.11 Mitigation and Monitoring Measures for Archaeological and Cultural Heritage

No.	Description
11.1	Excavation works associated with the construction of the passing bays shall be monitored by a fully qualified archaeologist. Full provision will be made available for the excavation of any archaeological features and/or deposits that may be identified, if that is deemed the most appropriate manner in which to proceed.
11.2	In order to mitigate the impact of the proposed development on the existing cable car and associated infrastructure, a full written and photographic record of the cultural heritage asset should be made prior to its removal.
11.3	In order to mitigate the impact of the proposed development on vernacular structures (CH 37 – 38), a full written and photographic record of the cultural heritage assets should be made prior to removal.

18.13 Mitigation and Monitoring Measures for Architectural Heritage

Table 18.12 Mitigation and Monitoring Measures for Architectural Heritage

No.	Description
12.1	It is recommended that the existing cable car and its ancillary facilities be recorded through photographic and written description prior to removal and that an exhibition that includes a history of the cable car together with drawings, photographs, newspaper articles and other mementoes be provided in the new visitor centre.

18.14 Mitigation and Monitoring Measures for Material Assets and Land

Table 18.13 Mitigation and Monitoring Measures for Material Assets and Land

No.	Description																														
13.1	Access will be restored to lands where it is removed or restricted. Required replacement field access gates are identified in Table 16.7. The location of such field access gates will be at a suitable location and, where possible, with the agreement of the landowner.																														
13.2	In general, permanent fencing will comprise of timber post and tension mesh fencing in accordance with CC-SCD-00320. Where field boundaries, that comprise of dry-stone walls, are removed as a result of the construction of the proposed development, the Contractor shall be responsible for the restoration of the section of the field boundary in question to dry-stone wall using stone from the affected field boundary. This restoration work shall be carried out by a suitably qualified and experienced professional, such that the wall is of the same style as the vernacular dry-stone walls of the region. Further fencing details are presented in Chapter 4 of this EIAR.																														
13.3	Where boundaries at dwelling houses are removed as part of the proposed development, the boundary treatment is proposed on a like for like basis subject to final agreement on accommodation works with individual property owners.																														
13.4	All existing land drains and watercourses severed by the proposed development will either be piped or re-directed into the existing drainage outfall.																														
13.5	Any services that are interfered with as a result of the proposed development will be repaired / replaced without unreasonable delay.																														
13.6	Ducting for the restoration of water and power supply services will be provided, as necessary, at a suitable location with the agreement of the landowner.																														
13.7	Mitigation measures related to individual properties shall be implemented, as set out in Table 16.7 in Chapter 16 of this EIAR, and summarised here: <table border="1" data-bbox="395 1182 1390 1966"> <thead> <tr> <th>Agricultural Property No.</th> <th>Mitigation Measure</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>2</td> <td>Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>3</td> <td>Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>4</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>5</td> <td>N/A</td> </tr> <tr> <td>6</td> <td>Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>7</td> <td>N/A</td> </tr> <tr> <td>8</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>9</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>10</td> <td>N/A</td> </tr> <tr> <td>11</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>12</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>13</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> <tr> <td>14</td> <td>Replace boundary with permanent stockproof boundary.</td> </tr> </tbody> </table>	Agricultural Property No.	Mitigation Measure	1	Replace boundary with permanent stockproof boundary.	2	Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.	3	Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.	4	Replace boundary with permanent stockproof boundary.	5	N/A	6	Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.	7	N/A	8	Replace boundary with permanent stockproof boundary.	9	Replace boundary with permanent stockproof boundary.	10	N/A	11	Replace boundary with permanent stockproof boundary.	12	Replace boundary with permanent stockproof boundary.	13	Replace boundary with permanent stockproof boundary.	14	Replace boundary with permanent stockproof boundary.
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No.	Description	
	Agricultural Property No.	Mitigation Measure
	15	Replace field access gate on affected lands. Replace boundary with permanent stockproof boundary.
	16	Replace boundary with permanent stockproof boundary.
13.8	Measures to mitigate noise impacts on sensitive receptors are detailed within Chapter 12 Noise and Vibration. Good communication between the contractor and adjacent landowners during the construction phase, especially when excessively loud activities are programmed, will prevent undue disturbance to farm animals due to noise. It will also facilitate farm enterprises so that valuable livestock sensitive to noise can be moved away from the construction work during critical times.	
13.9	Measures to control the production of dust will be put in place by the contractor. Good communication between the contractor and the farmers in the proximity of construction activities will facilitate on-going farm enterprises so that valuable livestock are kept as far as possible from the construction work during critical times.	
13.10	Access will be restored to lands where it is removed or restricted by the proposed development. The location of such access will be at a suitable location and, where possible, with the agreement of the landowner. Good communication between individual farmers and the contractor will minimise difficulties caused by the restriction of access to land. Temporary fencing will be erected as required to delineate the site boundary and to minimise disturbance to adjacent lands. Temporary access gates may be required until such time as the permanent access arrangements are in place.	
13.11	The residents and farmers of Dursey Island shall be informed of any interruptions to the cableway service, 1 week prior to interruptions, where possible. In cases in which access to-and-from Dursey Island is restricted for more than two days, or where more regular access is required by farmers with livestock on the island, alternative access to-and-from the island shall be provided for farmers by CCC.	
13.12	In cases where impeded drainage during construction will cause obvious difficulty to a particular landowner, temporary measures will be looked at on a site-specific basis. This may include allowing waters to drain to less critical areas, so as to minimise the impact.	
13.13	Where required, an alternative source of water / electricity will be provided to ensure that disruption to farming is minimised during the construction phase.	