Inspector's Report

ABP-311057-21

Development	Le haghaidh Chéim 1 den fhorbairt leanúnach ar an bpáirc nuálaíochta mara Páirc na Mara ar láithreán athfhorbraíochta a bhfuil limistéar foriomlán de thimpeall 9 heicteár i gceist leis. In éineacht leis an iarratas pleanála seo tá Ráiteas Tionchair Natura ('RTN') agus Tuarascáil ar an Measúnacht Tionchair Timpleallachta ('TMTT').
Location	Cill Chiaráin, Co. na Gaillimhe.
Planning Authority	Galway County Council
Planning Authority Reg. Ref.	20683
Applicant(s)	Údarás na Gaeltachta.
Type of Application	Permission
Planning Authority Decision	To refuse
Type of Appeal	First Party
Appellant(s)	Údarás na Gaeltachta.

Observer(s)	• An Fóram do Phobal Iorras Aithneach. • Seamus Walsh. • Tom Halloran & Family • Thomas Farrell, Avoca Seafoods Ltd • Carna Tidy Towns • Michael Coyne • Irish Bioeconomy Foundation CLG • Coiste Phobail Charna • Coiste Tacaíochta Chalafort Ros a'Mhíl • Cumann Peil na mBan Carna Caiseal • Conradh na Gaeilge • Pleanáil Teanga Chonamara Láir • Coiste Comhairleach Do Phlean 5 Bhliana Iorras Aithneach Ceantar Charna agus Chill Chiaráin • Comharchumann Sliogéisc Chonamara Teo • Glynsk House • Club Óige Iorras Aithneach • Galway Bay Against Salmon Cages (two submissions) • Forbairt chonamara Láir Teoranta • Wild Ireland Defence clg

- Ionad Cuimhneacháin na nlmirceach agus Diaspóra na Gaeltachta Carna
- Anna NicDhonnchadha
- GMIT
- Forum Connemara clg
- Cumman Lúthchleas Gael Cárna Caiseal
- Michael Sweeney
- Áine Ní Cheannbháin
- Fergal Cormican

Date of Site Inspection	21st March 2022.
Inspector	Deirdre MacGabhann

Contents

1.0 Site Location and Description

1.1. The 25.2ha appeal site, Páirc na Mara (PnM), is situated c.66km to the west of Galway City in the townlands of Kilkieran (Chill Chiaráin), Ardmore (Aird Mhóir) and Callowfinish (Caladh Mhaínse). The appeal site comprises lands for the proposed innovation park (9ha) and lands (remainder) for the associated infrastructure to connect the park to Lough Skannive and Lough Ierin to the west and Kilkieran Bay to the east.

1.2. The site for the innovation park lies c.0.5km to the north east of the village of Kilkieran, immediately west of Kilkieran Bay, with access from the R340 (a designated part of the Wild Atlantic Way). It includes:

- Land, shore and part of the bay to the east of the R340. The site includes a recently developed Údárás na Gaeltachta Marine Industrial Park. The industrial estate comprises an internal road and underground services, including wastewater treatment plant. The internal road provides access to individual 'plots' and terminates at the sea to the south of the Páirc. To date there has been no development of units within the park.
- To the north of the internal access road, within the boundary of the site, there is an all-weather pitch and, to the west of the pitch a playground immediately east of the regional road. The all-weather pitch has a small number of car parking spaces to the north of it and surface mounted solar PV cells. Ruins of buildings lie to west of site alongside the public road.
- Local road, L-52452, forms part of the northern boundary of the site. It serves a dwelling to the north of the site. From the public road the site gradually falls and then rises again, and falls towards Kilkieran Bay. Rock outcrops are present throughout much of the site.
- Loch na Síog Stream (EPA ref. Coill_Sáille_10) and other minor tributaries and small drains flow through the shallow valley area in the northern section of the Páirc na Mara site, south of the all-weather pitch. The stream crosses under the access road to the Páirc via an existing box culvert and under the eastern boundary road via a stone culvert and pipe culverts. It discharges

into Glenaruid River which discharges into Kilkieran Bay c.0.45km to the east of the site.

- A small number of dwellings lie within 60m of the site, to the north, south and west of it.

1.3. The site for the associated infrastructure includes:

- The public road between Páirc na Mara site and Lough Skannive (Loch Scainnimh), passing Loughaunore (Loch an Óir) and Lough Ierin (Loch an arainn). Irish Water infrastructure is situated between Loughaunore and Lough Ierin. These two loughs are impounded and provide the water supply for Irish Water's Carna-Kilkieran Regional Water Supply Scheme (RWSS). Loughaunore overflows into Lough Ierin and Lough Ierin drains into Lough Skannive.
- The access road to Lough Ierin and the loughside area adjoining the existing access gate and part of the lough itself (abstraction works).
- The loughside between the public road and Lough Skannive and part of the lough (abstraction works). A surface water drain links Lough Ierin to Lough Skannive. It passes under the public road separating Lough Ierin and Lough Skannive and passes through the subject site west of the public road into Lough Skannive.

1.4. Kilkieran Bay is designated as a Special Area of Conservation (site code 002111) and land to the north of Lough Skannive, adjoining the lough, forms part of Connemara Bog Complex SAC and pNHA (shared site code 002034).

2.0 **Proposed Development**

2.1. The proposed development, as revised by way of significant further information, as re-advertised on the 14th May 2021 and 22nd October 2022[1]. It comprises Phase 1 of the continued development of a Marine Innovation Park, Páirc na Mara, at Kilkieran. The appeal site is 25.2ha in area and the Marine Innovation Park 9ha.

2.2. The development is brought forward by Údarás na Gaeltachta (UnG), with a broad steering group acting as Advisory Committee (section 1.3 EIAR). The development comprises demolition of the existing ruins and the site and construction of a number of marine based industrial facilities along with educational and research facilities (below). It includes abstraction of water from Lough Skannive, transfer to and temporary storage within Lough Ierin impoundment and pumping to Parc na Mara site via a rising main. Abstractions are located in the townlands of Callowfinish and Kilkieran. A second phase of an overall master plan is proposed but it is not included in the subject development. A 10 year permission is sought for Phase 1. Phase 1 elements are listed in the applicant's Planning Report and are summarised below. Phase 1 and Phase 2 elements are also shown in the applicant's Masterplan and Phasing drawing, Drawing No. 2490-P-SL-LOC-005 (Volume 1 drawings).

2.3. It is stated that the proposed development, if approved, will create a low-carbon and environmentally sustainable hub (see section 3.4 of EIAR) to allow organisations and researchers to assist each other in maximising the potential for the marine sector in the area, facilitate the expansion and development of the marine resource in West Connemara and act as an enabler for the development of the marine industry at regional and national level.

2.4. Phase 1 structures are:

Applied Research and Education

- Marine Innovation Development Centre (MIDC) and Yard (reference 01 and 01A, Masterplan and Phasing drawing, 2490-P-SL-LOC-005). 1,900sqm of space for incubation of businesses and enterprises focused on marine

[1] On foot of a request from the Board, new notices published/erected in respect of the development on the 22nd October. A copy of the revised Environmental Impact Assessment Report and Appropriate Assessment, submitted with the appeal, were forwarded to the planning authority to be made available to the public for a period of 5 weeks.

economy. Space to include prototype testing space, product development kitchen, training and education rooms, business incubation workspaces, workshop, welfare facilities and outdoor covered support yard.

- Boat Building Centre (ref. 03). Space for teaching and practicing traditional boat building.
- Applied Research and Development Centre (ref. 02). This space for shared applied research, including wet and dry laboratories, offices and meeting rooms, is included in Phase 1 in the EIAR report (pages 3-3 and 3-72) but is shown in Phase 2 in the accompanying Drawing 2490-P-SL-LOC-005. It is assessed as being included in Phase 1.

Marine and Aquaculture Facilities

- Seaweed Added Value Centre (ref. 04). Processing of harvested seaweed to produce added-value liquid and powdered fertiliser products. Maximum capacity to process 21,000 tonnes seaweed per annum. To be imported by road and processed on site. Odour controls to include use of Best Available Techniques, covering and venting of point sources and odour abatement via wet scrubber system. Wastewater will be treated at the on-site WWTP and solid waste will be collected on site and sent for treatment at a licensed composting facility.
- Freshwater Recirculating Aquaculture System (RAS) (ref. 05A) – Grow out Unit (reference 05A). Freshwater recirculating aquaculture system where 90-99% of intake water is continuously purified and reused. Summary table on page 3-3 EIAR refers to use for on-growing of fin-fish or crustacean species, with a capacity 200 tonnes per annum. Page 3-49 refers only to crustaceans. Source of freshwater is Lough Skannive/Lough Ierin. 1-10% of wastewater rejected by RAS will be collected and treated in onsite WWTP.
- Salmon Post-smolt[2] Recirculating Aquaculture System (RAS) (ref. 06A). As above for on-growing of post smolt stage salmon. Capacity 1.34-1.6m salmon grown to post-smolt stage (page 3-3 and 3-46 EIAR), for on-growing at sea in

[2] Smolt – A stage of a salmon life cycle where the fish is getting ready to go out to sea and where the physiology of the body adapts from freshwater to saltwater. Post-smolt – Salmon which has acquired sea water tolerance.

existing licensed salmon farms. Sludge waste from facility will be either exported off-site or treated in the on-site WWTP (sized accordingly). Mortalities will be collected and treated on site (for odour control) for removal off site by licenced contractor.

- Salmon Post smolt – Smolt discharge system. Fish pump system, above the high water mark, to facilitate transfer of live smolt from RAS to well-boats (a boat which provides storage facilities for live fish) in Kilkieran Bay via a floating, demountable pipeline that is removed when not in use.
- Seawater Recirculating Aquaculture System (RAS) (ref. 07A and 07B) – Grow out Unit 1 and Grow out Unit 2. Seawater recirculating aquaculture system (recycling 90-99% of seawater intake) for on-growing of seawater fin-fish (including salmon, sea-bass and trout) entirely on land from eggs in hatchery unit (ref. 07C). Both units with capacity up to 4,000- 5,000 tonnes each per annum of market ready fish (page 3-3 and 3-57 EIAR) . Sludge waste from facility will be either exported off-site or treated in the on-site WWTP (sized accordingly). Mortalities will be collected and treated on site (for odour control) for removal off site by licenced contractor. Facility to include a fish processing system to produced packaged head-on gutted fish.
- Seawater Recirculating Aquaculture System (ref. 07C) – Hatchery and Smolt Unit. Hatchery and smolt-production unit to supply seawater RAS grow out facility with feedstock.
- Seawater Recirculating Aquaculture System – Utility Building (ref. 07D). Building housing utilities to support Seawater RAS grow out facilities.
- Shellfish Spatting[3] Pond – Office/lab (ref. 08D). Support building for spatting ponds, including office and laboratory.
- Shellfish Spatting Pond 1 and Pond 2/Seaweed Hatchery (ref. 08B and C). Ponds for spatting oyster seed to appropriate size for on-growing at sea. Pond for hatching seaweed to support on-growing on land or at sea.

[3] When shellfish reproduce, they spawn larvae that navigate the water column until they find an appropriate habitat with a structure to settle on. Once larvae permanently attach to a structure, they are know as spat. A spatting pond is a structure for hatching oyster larvae and spat inside a pond.

Associated access roads, works and ancillary services.

- To include additional internal access roads to provide access to buildings and infrastructure.
- 236 car parking spaces.

Supporting utilities and infrastructure development including those relating to:

- Energy Centre, to house a District Heating System and associated Heat Network. Centralised space heating, with base demand met using carbon-neutral woodchip boilers, back up by LPG fuelled boilers to meet peak demand and possible battery storage if required. Heat will be provided in the form of hot water to all facilities for space heating, domestic hot water generation and some limited process heating demands. It is also stated in the EIAR that photovoltaic panels will be fitted to all reasonable roof spaces at the site as shown on the relevant drawings (section 3.7.1.7 – review drawings).
- Process wastewater collection sewer and rising main. New collection sewer and rising main to collect and convey all process wastewater generated on site to the new proposed waste water treatment plant.
- Site Waste Water Treatment Plant, WWTP (for domestic and process waste water), Control Building, Plant Room and Sludge Holding and Blending Tanks. Centralised WWTP to treat all process wastewater generated on site ahead of reuse or disposal at sea. The biological treatment system will be based on Membrane Bioreactor (MBR) technology and will include anaerobic sludge digestion to recover energy from sludge and reduce transport off site for disposal.
- Domestic Wastewater Collection Sewer and Rising Mains (existing).
- Domestic Wastewater Treatment Plant. Existing WWTP to be upgraded, with discharge of treated effluent to marine outfall pipe (below).
- Treated Effluent Marine Outfall. To Kilkieran Bay for discharge of treated effluent and storm-water flows. Outfall pipe to be installed by delayed punch out horizontal directional drilling (HDD) techniques, by specialist HDD contractor (section 3.9.8, EIAR for methodology).

- Freshwater Abstraction. Intakes and Pump Stations at Lough Skannive and Lough Ierin, to facilitate water transferred from Lough Skannive to Lough Ierin and from Lough Ierin to PnM, transfer pipeline, pump house and distribution network at Páirc na Mara, including 2 short term storage tanks for abstracted freshwater at Páirc na Mara.
- Seawater Abstraction intake from Kilkieran Bay, with pump houses and distribution network at Páirc na Mara, including 2 no. seawater storage tanks for short term holding of abstracted sea water. Seawater intake pipe to be installed by delayed punch out horizontal directional drilling (HDD) techniques, by specialist HDD contractor (section 3.9.8, EIAR for methodology).
- Firewater storage, firewater pumps and hydrant network.
- Surface water drainage network and treatment systems. Extension of existing surface water network on-site to drain all roofs and impermeable surfaces, with treatment using appropriate petrol interceptors and flow control as necessary.
- Street lighting system. Extension of existing street-lighting network and installation of appropriate numbers of lamp standards and other required lighting.
- Telecoms ducting. Expansion of existing telecoms ducting across site.
- Security hut. Provision of manned security hut if required.

2.5. As the eastern edge of the PnM site, as it adjoins Kilkieran Bay, ground levels will be raised and retaining walls constructed along the southern, eastern and northern boundaries of the site (see drawing no. 2490-P-SL-R-TS.2 Retaining Wall Preliminary Design).

2.6. As mitigation for the loss of undesignated blanket bog and wet heath (from PnM site), an area for off-site bog restoration has been selected within the Connemara Bog Complex SPA. The site is situated at Clochar na Lará c.6.2km to the north west of An Spidéal, County Galway. Within the 16.3ha site two Annex I habitats that are Qualifying Interests of the SAC will be restored 'blanket bog' and 'natural dystrophic lakes and ponds'. Cutover areas of bog will be reprofiled, existing drains will be

blocked, natural regeneration will be used to revegetate the site and results regularly monitored (Appendix G to EIAR, Chapter 7).

2.7. Phase 2 (not subject of this application/appeal) will include:

- Freshwater Recirculating Aquaculture System – Hatchery Unit (ref. 05B). To supply freshwater RAS.
- Cleaner Fish Grow-out facility (ref. 09). For the growth of fish stock (e.g. Lumpfish) used to control sea-lice (feed on sea-lice) as an alternative to medicines for sea-lice control. To be shipped by tanker (road) or to well-boats to customers.
- Aquaponics Facility (ref. 10). To produce small quantities of high value seaweed and sea vegetables using wastewater from the RAS. Facility will be primarily research focused. Outputs will be harvested seaweed and cleaned wastewater (to flow to WWTP).
- Blast Freezer unit (ref.11).
- Seaweed – Nutraceutical Extraction (ref. 12). For the production of high value bioactive nutraceutical compounds for food, cosmetics, pharma, agriculture etc. Facility will process c.260tonnes of seaweed per annum and other marine biomass. Wastewater will be discharged to on site WWTP. Solid waste will be removed by certified contractor.
- Fish Smokery (ref. 13). Facility will import fillets and head on gutted fish for wood smoking (500 tonnes per annum).

2.8. Gross floor area of proposed works extends to 31,975sqm, including proposed storage tanks. The site will require up to 2.5megalitres (2,500 cubic metres) per day of untreated lake water to serve the on-site processes. The source of this water is Lough Skannive, located to the west of the site. The Páirc will also require 2.81megalitres (2,810 cubic metres) per day of high quality seawater to support the various research, aquaculture and marine facilities planned. Seawater will be abstracted from Kilkieran Bay via a new intake pipeline.

2.9. The applicant submitted details of the application to the EIA Portal (26th May 2020). The planning application includes drawings in three volumes and the following reports.

Drawings:

- Volume 1 – Layouts and Plans, Roads, Site Infrastructure.
- Volume 2 – Flood Risk Assessment, Site Drainage, Site Utilities and Networks, Sea Water Intake and Marine Outfall.
- Volume 3 – Freshwater Abstraction, Transfer, Storage and Distribution, Architectural Drawings – Plans, Elevations and Roof for each.

Reports

- Planning Report.
- Environmental Impact Assessment Report (August 2021) – Updated subsequent to PA decision to refuse permission.
- Natura Impact Statement.
- Consent letters.
- Photomontages.

2.10. It is stated in the EIAR that the following licences will be required:

- Foreshore Licence for the seawater intake and treated effluent marine outfall at Kilkieran Bay (section 3.7.1.2 EIAR).
- Aquaculture Licenses from the Aquaculture and Foreshore Management Division of the Department of Agriculture, Food and the Marine (DAFM) for the various aquaculture and production facilities on site (section 3.7.3.1.1 EIAR).
- Depending on the species proposed to be grown in the freshwater RAS grow out system, a permit for the translocation/introduction of alien and locally absent species under Article 6 of Council Regulation (EC) no. 708/2007, from the DAFM.
- Road Opening Licences from Galway County Council.
- OPW for consent for replacement of existing and construction of new culverts to facilitate rising main from Lough Ierin to Páirc na Mara (nine culverts in total, with three within the Páirc na Mara site) – section 3.9.6 EIAR).

3.0 Planning Authority Decision

3.1. Decision

3.1.1. On the 12th July 2021 the planning authority decided to refuse permission for the development on the grounds of:

(1) Location of development within Kilkieran Bay and Islands SAC, adjoining Connemara Bay Complex SAC and proximity to other European sites, protection afforded to these by EU and national legislation and policies of the County Development Plan (policy NHB1, objectives NHB1-2, DM standard 40), insufficient information in respect of environmental effects and mitigation measures and the risk of adverse effects on the integrity of Kilkieran Bay and Islands SAC and Connemara Bog Complex SPA,

(2) Inadequate information to enable determination in respect of environmental impacts, including effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, landscape and interaction of these effects,

(3) Deficiencies in measures to mitigate construction noise and dust and undue impact on residential amenities, and

(4) Absence of arrangements for the closure of existing local road L-52452, the risk of conflicting traffic movements and risk to public safety.

3.2. Planning Authority Reports

3.2.1. Planning Reports

- Planning Report (July 2020) – The report describes the subject site and the proposed development, summarises the planning history of the site and matters discussed in pre-planning meetings. It sets out national and local policy in respect of the site and summarises matters raised by prescribed bodies and in submissions and observations. The development is considered to strategically acceptable at the location but recommends that the application is deferred pending further information on the following:

- General matters. Economic benefits (direct and indirect jobs to be created), justification for the site in the context of alternative locations, separate regulatory consents/licences required to be obtained.
- Roads and Transportation. Planning status of site entrance and for treatment of local road L-52452, service traffic, provision of a road safety audit and Traffic Management Plan (during construction works).
- Freshwater Supply Scheme. Information to demonstrate maintenance of public water supply, mitigation measures for scour point on rising main (Lough Ierin to PnM), outcome of IW Pre-Connection Enquiry Form, details of fisheries compensatory flow system, Construction Environmental Management Plan and construction waste management plan for all freshwater supply scheme construction works (to include site specific arrangements for water quality mitigation measures), clarity in respect of works to Loughaunore.
- Flood risk. More detailed flood mapping of PnM site, further analysis of high end future scenario flood levels, details of sea wall and appraisal of its impact on flood risk and coastal erosion, flood risk on adjoining properties, details of flood relief culverting and effects on hydraulic capacity of bridge (at culvert no. 6), flood relief works required outside of the planning unit, necessary consents for works, mitigation measures to prevent downstream ecological impacts, discharge arrangements for surface water catchments, details of cut off drain and wall along south western boundary of site.
- Natura Impact.
    - Further information in respect of potential impacts on Kilkieran Bay and Islands SAC, including arrangements for removal of existing effluent outfall pipe from PnM, particular attention to targets and notes related to marine Annex I habitats and NPWS Article 17 report for affected habitats, survey work of sea bed and likely effects of intake/outfall pipes, justification for de minimus effects, potential effects on water quality from construction pollutants, in-combination effects (aquaculture in

Kilkieran Bay), impact of nitrogen deposition during operation, treatment of invasive species, response to NPWS submission, AA status of section 50 for flood alleviation consent works.

- Further information in respect of potential impacts on Connemara Bog Complex SAC, including impact of abstraction from Lough Skannive on public water supply (Dry Year Critical Peak), consequences for PnM if public water supply is prioritised, inclusion of PnM process water in demand on public water supply, in combination effects on Connemara Bog complex of water supply requirements, impact of scoured water on Loughaunore and SAC, impact on water quality of Lough Ierin (import from Lough Skannive) and ecological consequence of this, site specific interactions with groundwater, consequences of loss of 4ha of blanket bog (especially on flood risk), effect on alkaline fens, in-combination effects (aquaculture), submissions from Department of Culture, Heritage & Gaeltacht (impact on Annex I habitat along northern shore of Lough Skannive [3110], impact on [3110] communities in Lough Skannive, presence of Bog hair grass in works area Lough Skannive) and submissions by Department of Culture, Heritage and the Gaeltacht (impact on Lough Skannive and fringing habitats), presence of invasive species, works to Loughaunore (raising of weir) and reference to most recent Article 17 report in AA.

- Landscape and visual effects. A further photomontage (from dwelling adjacent to north-eastern boundary), scale and massing of development (especially freshwater and seawater RAS buildings and Seaweed added value facility) and impact on dwellings, inconsistencies in site layout and building plans, visual assessment of water abstraction infrastructure and glint and glare assessment.
- Consultation and regulation. Details of consultation with NPWS for wastewater discharge (dispersion modelling, emission limit values and works to seabed floor). Status of applications for other licences.

- Invasive species. Invasive species management plan and means to manage invasive species in CEMP.
- Surface and groundwater. Site specific measures for mitigation impacts on water and CEMP for these works, details of water management system and water treatment system for construction works at pumping stations.
- Rock extraction. Projected quantities of bedrock, soil and other materials to be extracted, with HGV movements.
- Construction noise. Further analysis of blasting activity and noise prediction and mitigation measures at sensitive receptors, number of HGV vehicles to remove materials.
- Construction dust. Full details of dust suppression measures.
- Construction waste management. Volume of waste to be generated, construction and operation, and waste disposal outlets.
- Seabed drilling and marine survey. Progress of application for drilling, detailed plans of hard standing area for seabed drilling (located in SAC).
- Underwater noise. Potential for underwater noise and associated disturbance in Kilkieran Bay and relevant mitigation measures.
- Marine disturbance. Impact of hydro-blast cleaning system (water intake pipes) on marine ecology.
- Seawater abstraction and treated wastewater outfall. Location of outfall and intake points, intentions in respect of existing marine outfall.
- Marine navigation. Design and location of marine navigational aid (including seabed survey).
- Process waste management. Cumulative effects with aquaculture (including enrichment from food and faeces and disease), appraisal of odours from seaweed/fish waste.
- Recirculating aquaculture systems. Quantity of sludge to be removed by licensed contractor and quantity going to on-site WWTP, clarity

regarding no intake of waste to site, arrangements for disposal of insoluble fraction of processed seaweed.

- Feedstocks. Source and volume of seaweed feedstocks, salmon feed and biomass for woodchip boiler.
- Marine environment. Full description of the proposed operation/activity, baseline description of relevant environment, description of biological environment affected by the development, impact on Annex I habitats within context of conservation objectives for the site (including targets and notes in respect of Annex I habitats which require qualifying features to be stable or increasing in terms of habitat or community area). Allowance of de minimus habitat loss is contrary to conservation objectives.
- NIS to be updated to include further information.

- Stage 1 Appropriate Assessment Screening of PL ref. 20/683 (July 2020) – Concludes that the PA has serious concerns regarding habitat loss/fragmentation in European sites and require further information to provide clarity and certainty with regard to assessing the implications of the project (direct, indirect and cumulative effects) on European sites within its zone of influence, namely Kilkieran Bay and Islands SAC and the Connemara Bog SAC.
- Planning Report (July 2021) – Refers to further information submitted and to the submissions and observations made. Whilst the report accepts that some matters have been adequately addressed by the applicant, it recommends refusing permission on for four reasons as set out in the decision to refuse permission:- risk of adverse effects on Kilkieran Bay and Islands SAC and Connemara Bog Complex SAC, insufficient level of information to determine likelihood of environmental effects, impact on residential amenity (construction noise and dust) and traffic hazard (conflicting traffic movements at entrance to site with presence of existing road L-52452 in proximity to proposed entrance.

3.2.2. Other Technical Reports

- Environment report, GCC (July 2020) – Not on file but referred to Planning Report (July 2020). Recommends further information in respect of impact on freshwater lakes and rivers (concerns raised by IW), impact on adjacent coastal protected areas (including cumulative effects), odour and air (recommends condition to control odour at site boundaries), waste management (recommends that volume of waste to be generated during construction and operation be determined), harvesting of seaweed (volume and collection method), general conditions (CEMP to be submitted to PA/Environment section for approval with specific measures for liaison with statutory bodies during construction and operation).

  Subsequent report (9th July 2021 – No confirmation from Irish Water that concerns raised in original submission have been addressed (risk to water quality and protected species in Lough Skannive and Lough an Ierin). Construction noise to occur over 4.5 years. No mitigation measures for occasional noise in excess of 65 dBLAeq,T (screens to be used for rock breaking). Operational noise to exceed 45db Lar, but with mitigation will be below the limit. Vibrations as per TII guidelines, however expected levels at nearby sensitive receptors not included. Refers to DHLGH concerns regarding loss of habitats within SAC and effect of works on integrity of site. Cumulative effects of proposed aquaculture on coastal SACs. Development will require section 4 wastewater discharge licence. Limits to comply with WFD and Surface Water Regulations to be reviewed as part of licence application. Risk of odour from seaweed and fish processing facilities. Condition may be require d to limit odours to site boundaries and possible specific odour limit and monitoring of complaints If permission is granted recommend CEMP submitted for approval with details of timelines for surveys and monitoring and mitigation measures in NIS and EIAR, works to be supervised by Ecological Clerk of Works and IFI and NWPS to be advised, as relevant, in advance of any works and applicant to liaise with Irish Water, IFI and NPW during operation to ensure water levels are maintained at sustainable levels in the freshwater habitats.

3.3. **Prescribed Bodies**

- An Taisce (8th July 2020) – Development is not in compliance with EU Marine Strategy Framework Directive (2008/56/EC), MSFD, which requires MS to achieve Good Environmental Status (GES) in their marine areas based on 11 descriptors. Further information required to assess the proposal for compliance with MSFD. Section 2.4.1, EIAR, refers to 'Harnessing our Ocean Wealth 2012', an outdated exploitative and extractive view of the marine environment (not subject to strategic environmental assessment) which is incompatible with the overarching aims of the MSFD to achieve GES. Sustainability of various activities must be assessed through effective independent auditing. Existing offshore aquaculture facilities that smolts will transfer to, should be audited to ensure compliance with required mitigation measures. Means by which seaweed will be harvested and sustainability of this and potential impacts on Kilkieran Bay and Island SAC. EIAR needs to consider effect of freshwater abstraction in the context of up to date climate modelling and likely effects on the ecology of the lakes and nearby streams. PA should ensure that the proposal aligns with Smarter Travel Targets for modal shift in workplace travel.

  Subsequent observation (22nd June 2021), states that PA should have regard to High Court ruling by Justice Hyland (2018 740 JR) in respect of treatment of unassigned waters under the Water Framework Directive. Further, case law has established (C-258/11 Sweetman & others v ABP, C404/09 Commission v Spain) that a plan or project can only be authorised where there is no lacunae, definitive findings or scientific doubt as to the absence of effects on European sites. PA should be satisfied that the proposal meets all legal tests to comply with the requirements of Article 6(3) of the Habitats Directive.

- Irish Water (15th July 2020) – Proposal to supply raw water from Lough Ierin to Páirc na Mara has potential to impact on Carna/Kilkieran Regional Water Supply Scheme. IW currently extract from Lough Ierin/Loughaunore. By 2044, IW estimate that there will be a shortfall in water available at these abstraction points of c.464m^3/day, based on dry year critical peak of

2.939MLD (state is an estimate and could be more). In such circumstances, transfer of raw water to PnM would have to be reduced or suspended. Raw water pumped from Lough Skannive to Lough Ierin may also be required to boost the public water supply. Recommends further information (a) to demonstrate that rising main and booster pumps from Lough Skannive to Lough Ierin are sized to ensure public water supply is maintained at all times, (b) mitigation measure to ensure that the scoured water does not affect water quality in Loughaunore, (c) mitigation measures to prevent deterioration in water quality in Lough Ierin with transfer from Lough Skannive and (d) submission of outcome of pre-connection enquire to IW. I W also set out conditions in the event of a permission being granted.

Subsequent submission (not on file but summarised in Planning Report, July 2021) IW require public water supply to be safeguarded during construction and operation, with reduction or cessation of transfer of raw water to PnM during peak demand times. Rising main and booster pumps from Lough Skannive to Lough Ierin to be adequately sized to allow deficit in raw water to be transferred to Lough Ierin for the benefit of Irish Water. In order to ensure public water supply, IW to confirm a cut off level in Lough Ierin at which no further water will be abstracted from Lough Ierin, whilst UnG continue to pump water to Lough Ierin to maintain this level. EIAR non-technical summary refers to incorrect normal year annual average demand on Carna Kilkieran water supply. Normal year average demand does not include for 7-10% process water abstracted by IW. IW is reliant on being able to use Lough Skannive as a source of future shortfall in supply and will require that any future license granted for abstraction rights includes a 'safeguarding' of 464m^3/day. Requests no deterioration in water quality during construction and operation.

- Development Applications Unit, Department of Culture, Heritage and the Gaeltacht, DCHG (23rd July 2020):
    - 23rd July 2020 – *Archaeology*. Concurs with findings of archaeological assessment and recommends an archaeological assessment of the development site as a condition for any grant of permission. *Nature conservation*. Recommends further information in respect of marine

Annex I habitats, including full description of proposed operation, baseline description of relevant environment (consideration to impacts on Annex I habitats having regard to targets and notes of the qualifying interest which require the qualifying features are stable or increasing in terms of habitat or community area, an allowance of *de minimus* habitat loss is contrary to conservation objectives). *Terrestrial ecology.* Data on water level management insufficient to demonstrate how control measures will match with requirement for 2.5MLD, seasonality of water levels in lake and water demand in catchment. Insufficient evidence to support the conclusions of the NIS that qualifying interest SAC habitats along the northern shore of Lough Skannive, will not be impacted by acknowledged fluctuations in water levels. Requirement under Habitats Directive to maintain favourable conservation status of Lough Skannive (undesignated but corresponds to EU Habitats Annex I habitat). Impact of water abstraction on potential for protected species Bog Hair Grass on shoreline of Lough Skannive. Recommends further information in the form of hydrological and ecological assessment of the impact of water abstraction on Lough Skannive and its fringing habitats and dependent species taking account of seasonality of water levels and in-combination effects of water abstraction in catchment.

- 21st June 2021 – *Archaeology.* Mitigation to be carried out in full. *Nature conservation: marine science and biodiversity.* Issue raised has not been resolved, that applicant should familiarise themselves with the conservation objectives of the site, with particular attention to notes and targets related to Annex I habitats which require that qualifying features are stable or increasing in terms of habitat or community area. An allowance for *de minimus* habitat loss is contrary to these conservation objectives.
- 25th June 2021 – *Archaeology.* Mitigation measures in respect of archaeology to be carried out in full. *Nature conservation, restoration plan.* Welcomes restoration of bog restoration works. Makes recommendations in respect of restoration plan for lands within

Connemara Bog Complex SAC (phasing, timing, roles). *NIS*. Lack of clarity regarding extent of works in Kilkieran Bay and Islands SAC (no reference to revised drawings in NIS or CEMP) and absence of assessment of effects of loss of supporting habitats relevant to qualifying interests. Competent authority can only grant permission when they have made certain it will not affect the integrity of a European site. *General ecological considerations.* Makes recommendations in respect of works to mitigate effects on natural heritage (culverts to allow safe passage of protected species, works to take place outside of bird nesting season with specific nest searches prior to works where necessary, final CEMP audit and report to be submitted to PA to ensure effective implementation of measures, requirement for assessment of street lighting proposals). *Marine Science and Biodiversity.* Also states that issue previously raised has not been resolved, that applicant should familiarise themselves with the conservation objectives of the site, with particular attention to notes and targets related to Annex I habitats which require that qualifying features are stable or increasing in terms of habitat or community area. An allowance for *de minimus* habitat loss is contrary to these conservation objectives.

3.4. Third Party Observations

3.4.1. There are a number of third party observations on file. These are largely split into those supporting the development on economic, social and community grounds and those opposing it on grounds of procedure, policy and environmental effects. Observations are summarised below:

Arguments For:

- Development is consistent with the rich tradition of maritime heritage of the area and is much needed in the socio-economically deprived area which is suffering de-population. Development will bring economic, social and community benefits to area, including employment opportunities, rejuvenation

of area, boosting local services and infrastructure, tourism and increase in population.

- Development would help protect and foster the Irish language.
- The project is supported by local, regional, national and international policies.
- The project would be sensitive to its local context. Comprehensive studies have informed the application.
- Development is innovative, state of the art, low energy and sustainable.
- Education and research facilities are required if the marine sector is to develop in a sustainable manner.

Arguments Against:

- Premature pending decision in respect of High Court case 2018 740 JR. [Peter Sweetman v An Bord Pleanála others – The applicant in the case, Sweetman, sought to challenge the Board which granted planning permission for development which included abstraction of freshwater from a lough in County Galway, including temporary pipe into lake for the purpose of bathing salmon in fish farms off the coast in the freshwater to rid them of various diseases. Judgement on 15th January 2021 quashed the decision of the Board granting permission for the development solely on the basis of its failure to comply with the requirements of the WFD, essentially on the grounds that as no status has been provided for the subject waterbody by the EPA it was possible to evaluate the proposed works by reference to the requirements of the WFD].
- Application is incomplete and not available in Irish.
- Inadequate public notices (in Irish only, no reference to abstractions, in local paper only – Connacht Tribune).
- Inadequate public consultation (negative aspects of development not fully discussed at public meetings, limited time for public consultation with delay in uploading files on-line, limited time given at PA offices to view submitted documents). In conflict with Aarhus Convention and EIA Directive.

- Failure to demonstrate how application is consistent with Galway County Development Plan (climate change, flooding, water, waste management, roads and transport, marine resources, environmental management, national heritage and biodiversity).
- EIS is inadequate, should be supplemented with further research. Alternative section is poor given location of site in sensitive environment. Do nothing scenario does not take into account potential for restoration of the site and removal of alien species by state body.
- Inappropriate siting in European sites and Designated Shellfish Waters.
- No information on government or agencies statutory EIA and determinations under EU environmental protection legislation.
- Inadequate information on function of the proposed activities within Páirc.
- Cumulative effects of development with salmon farming/aquaculture industries in Kilkieran Ban and Islands SAC. Impact of salmon farming on Kilkieran Bay and loss/displacement of previous jobs in tourism. Lack of clarity where 1.6million farmed smolts will be going and occupant for RAS unit. Impact of fish feed for farmed salmon on wild marine species.
- Risk of flooding on application site (as identified under ABP-301404 and PA ref. 17/157). Inappropriate construction of waste facilities in a flood risk site adjacent to protected tidal marine environment.
- Inputs to on operation of District Heating System (source material, risk of explosion).
- Earthworks and drainage works have led to flooding and drainage problems first noted 20 years ago on neighbouring farmlands. Proposed development would worsen the situation and lead to problems with noise, dust and odour omissions.
- Impact of water abstraction on Lough Scainnimh and Lock Ierin and associated protected habitats and species and on public water supply.

- Impact of seawater abstraction and discharge of wastewater on Kilkieran Bay and Islands SAC. Horizontal directional drilling will have a significant impact on crustaceans (vibration and noise).
- Clarification on use of abstracted freshwater (treatment of diseased caged farmed salmon).
- Sustainability of harvesting wild fish to provide feed for farmed fish.
- Risks to water quality from construction and operation (including increased sediment load, discharges to Kilkieran Bay) and negative effects on habitats and species in protected sites and the general environment.
- Potential impacts on geological environment and decreased air quality (dust, combustion chemicals, odours, noise) require further clarification and assessment.
- Impacts on and capacity of local road infrastructure to cater for the development with increased traffic load (deficient data).
- Innovation park is not urgent, more pressing issues with climate change and restoring seas to health.
- Development centres on salmon farming, not marine innovation.
- Uploaded files poorly labelled. No Appropriate Assessment found.
- Finest maerl deposits in Kilkieran Bay (around Ardmore Point and just off subject site). Site is also close to seagrass bed communities. No seawater habitat and health monitoring in area of abstraction and discharge.
- Have appropriate consents been obtained to access loughs.
- Availability of proposed jobs locally (skill match), or commuting from Galway. Socio-economic effects in area (housing, language, schools, medical resources).
- Need for development as similar Foras na Mara research facility at Lehangh Pool in Connemara and Keywater Fisheries IMTA in Sligo.
- No assessment of disposal of sludge or dead fish stocks.

4.0 **Planning History**

4.1. The planning history of the site includes the following:

- PA ref. 01/2584 – Planning permission granted for Phase 1 of Páirc na Mara in 2002 comprising access onto R340, front boundary wall, internal access road and underground services (stormwater, foul collection, WWTP for 200 PE, telecom and streetlighting ducts). Access point to R340, front boundary wall, internal access roads and underground services completed in 2005.
- PA ref. 04/0175 – Construction of two no. ESB sub-stations and adjoining switch rooms. Constructed.
- PA ref. 07/3498 and PL07.228892 – Permission granted for construction of salmon harvesting plant at Páirc na Mara. Not constructed.
- PA ref. 17/1780 and ABP-301404 – Permission refused by the Board for Páirc na Mara office (45sqm) with canteen, toilet and temporary sewage holding tank. Grounds were location of the site in an area at risk of flooding, nature of development and risk of adverse effect on European site (Kilkieran Bay and Islands SAC).

4.2. Other planning applications have been made within the Páirc na Mara site associated with the all-weather playing pitch, playground and associated car parking (see section 2.1 applicant's Planning Report, section 5.2 of EIAR and on page 45 of the PA Planning Report of July 2020).

5.0 Policy Context

5.1. EU and National Policy

Water

- The Water Framework Directive (WFD) requires all member states to protect and improve quality in all waters so that 'good' ecological status is achieved by 2015 (revised to 2027). The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (SI no. 722 of 2003).

Planning

- National Planning Framework, 2018. Recognises the importance of the agri-food sector in the national economy and refers to Food Wise 2025, the strategic plan for the development of the sector (including fisheries) for the period to 2025. Supports the development of the circular bioeconomy i.e. the production of renewable biological resources, such as fish, and the conversion of these resources and waste stream residues into value added products. National Policy Objective 23 facilitates the development of the rural economy through supporting a sustainable and economically efficient food sector, together with fishing and aquaculture and the bio-economy, subject to environmental safeguards. Section 7 deals with the marine planning. It recognises the critical role played by the seafood sector in the sustainable development of the economic and social fabric of specific regions and many small rural communities. It refers to the Government's vision for the sector in the publication 'Harnessing Our Ocean Wealth, 2021'. NPO 39 supports the sustainable growth and development of maritime economy and continued investment in the seafood sector, particularly in remote rural and coast communities and islands.
- River Basin Management Plan for Ireland 2018 to 2021. This second river basin management plan sets out how progress will be made towards achieving the water quality requirements of the Water Framework Directive in the State. It refers to the water abstraction authorisation system which is currently being established.

- Guidelines for Planning Authorities on the Planning System and Flood Risk Management (2009). Require the planning system to avoid development in areas at risk of flooding, adopt a sequential approach to flood risk management for the location of new development based on avoidance, reduction and mitigation of risks and incorporate flood risk assessment into decisions on planning applications.

Sector Specific

- Harnessing Our Ocean Wealth: An Integrated Marine Plan for Ireland 2012. Sets out a strategy for the development of marine sector. It recognises significant scope to expand the country's aquaculture industry and employment provided by the seafood sector and economic contribution made by the seaweed industry.
- National Strategic Plan for Sustainable Aquaculture Development 2015. Sets out a vision for a sustainable and competitive aquaculture sector, where production grows according to market and consumer demand and in balance with nature and society. The Plan recognises the role of the applicant, Údárás na Gaeltachta in the development of aquaculture in the Gaeltacht regions.
- Food Harvest: A Vision for Agri-Food and Fisheries 2020. Sets out strategic direction for agri-food and fisheries based on a smart approach towards growth targets and environmentally sustainable products.
- National Marine Planning Framework, 2021. Sets out a strategic plan for marine activity in the state. Policies support the sustainable development of aquaculture and land based coastal infrastructure to support the development of the sector, in accordance with environmental safeguards (Aquaculture Policy 1 and 3). The Framework document recognises the importance of the marine sector in enabling the social and economic development of rural coastal areas and the particular challenges facing Gaeltacht areas often situated in peripheral regions. Planning policy Rural Coastal and Island Communities Policy 1 supports proposals for the development of the marine sector in rural communities. Objectives of the Plan also support sustainable seaweed harvesting (Chapter 20).

5.2. Regional Policy

- Regional Spatial and Economic Strategy (Northern and Western Regional Assembly) 2020. Supports government objectives in respect of the bioeconomy and opportunities in the region for circular resource efficiency, the protection of the marine environment and growth of the marine economy consistent with the National Marine Planning Framework (Regional Policy Objectives (RPOs) 4.27 and 4.30). Páirc na Mara is identified as a regional asset with the potential to provide infrastructure and facilities to support the establishment and expansion of a cross-section of marine enterprises. RPO 4.32 and 4.34 support the development of Páirc na Mara and other strategic Marine Resource Innovation Centres, to increase aquaculture and seafood sectoral growth in the marine economy.

5.3. Development Plan

5.3.1. The appeal sites lies within the administrative area of Galway County Development Plan 2015 – 2021. Strategic aims promote regional development, environmental protection, living landscapes and balanced urban and rural areas.

5.3.2. Chapter 11 of the Plan deals with Agriculture, Fishing, Marine Resources and Forestry. The Plan acknowledges that aquaculture continues to provide employment and generate income in rural and coastal areas. Fishing and marine resource policies support the implementation of the Shellfish Waters Directive, sustainable growth of marine resource enterprises and respect of ecological limits (Policy AFF 6, 5 and 7).

5.3.3. Policy objective AFF 8 deals with aquaculture. It states that the Council shall support and promote the sustainable development of the aquaculture sector in order to maximize its contribution to employment creation and growth in coastal communities whilst balancing environmental considerations. Special consideration should be made to gradually enforce a policy that would encourage onshore fish farming practices and special consideration would be given when granting planning for on shore farms to areas that are already involved in the fish farming industry.

5.3.4. Policy objective AFF 14 supports the provision of infrastructure necessary for the development of fishing, seaweed and mari-culture industry and AFF 15 encourages

and supports an integrative approach to marine enterprise and will consider appropriately located marine resourced enterprises within the County, subject to environmental considerations.

5.3.5. Other policies of the Plan afford protection to and promote the Irish language, protect water resources, natural heritage and European sites and landscape character and protected views (see attachments). These include Policy NHB 1 and Objectives NHB1-3 and DM40, which afford protection to European sites.

5.3.6. The appeal site is situated in a rural landscape which is designated as having High Landscape Value and High Landscape Sensitivity. There is a protected view from Kilkieran to the east over Kilkieran Bay (View 98). Other views are in the area of the site but are removed from it.

5.3.7. Variation no. 2(b) of the Plan comprises a Plan for the Gaeltacht. Cill Chiaráin lies in District A, described as a very dispersed area, with the main type of employment professional services, agriculture, fishing and forestry. The Plan recognises and protects the unique nature of the Gaeltacht area and promotes its sustainable development, including of infrastructure projects, appropriate to its character, heritage, amenity and strategic role. It acknowledges that economic and social decline is a significant issue for some areas and supports the development of sufficient level of services and infrastructure to ensure its economic and social viability.

5.4. Natural Heritage Designations

5.4.1. The appeal site extends into Kilkieran Bay which is designated as a Special Area of Conservation (SAC), Kilkieran Bay and Islands SAC, site code 002111. The development proposes abstraction of water from Lough Skannive. The northern shore of this lough is also designated as an SAC, Connemara Bog Complex SAC (site code 002034) and as a proposed Natural Heritage Area. Other European and national site lie in the wider area (see attachments).

5.5. EIA Screening

5.5.1. Schedule 5 of the Planning and Development Regulations 2001, as amended, sets out classes of development and thresholds for development which require

environmental impact assessment (EIA). Article 1(f), Part 2, Agriculture, Silviculture and Aquaculture, requires EIA for the following:

> *'Seawater fish breeding installations with an output which would exceed 100 tonnes per annum; all fish breeding installations consisting of cage rearing in lakes; all fish breeding installations upstream of drinking water intakes; other freshwater fish breeding installations which would exceed 1 million smolts and with less than 1 cubic metre per second per 1 million smolts low flow diluting water'.*

5.5.2. It is stated in the EIAR that the proposed development (a) includes proposals for Seawater Recirculating Aquaculture System with capacities for seawater fish output of >100 tonnes per annum, and (b) will result in the production of over 1 million smolts and has less than 1 cubic metres per second per million smolts low-flow diluting water. The subject development therefore requires EIA.

6.0 **The Appeal**

6.1. **Grounds of Appeal**

6.1.1. On the 9th August 2021, the appellant submitted a first party appeal to the Board. The submission included a revised Environmental Impact Assessment Report and Appropriate Assessment (Rev 3 – Final). Grounds of appeal are:

1. Appropriate assessment – NIS has been informed by extensive surveys and assessments in relation to marine, aquatic and terrestrial ecology carried out by experts in their field. Surveys include dive surveys in 2019, 2020 and 2021 (Kilkieran Bay) and assessments include an Underwater Noise Assessment. Conclusions are clearly set out in the NIS. Development has designed to avoid all keystone communities indicative of the [1160] Annex I habitats in Kilkieran Bay and Islands SAC. Loss of seabed is 0.66m^2 or c.0.00000033% of total marine SAC. Application includes comprehensive invasive species management plan and site specific measures for the management of water quality during construction. NIS provides assessment of cumulative and in-combination effects including effects on water quality in Kilkieran Bay (with existing aquaculture), water levels in Lough Skannive and effects on PnM with restrictions in supply (to ensure public water supply) and seaweed harvesting. Development, as a matter of certainty, will not adversely affect the integrity of Kilkieran Bay and Island SAC or Connemara Bog Complex SAC in the light of conservation objectives for the site. Bog restoration works do not form part of the planning application but are included purpose of EIA.
2. EIA – EIAR and FI response demonstrated and provided extensive evidence in respect of possible environmental effects and showed that environmental impacts were not significant. The PA failed to undertake an EIA which followed recognised good practice. EIA failed to focus on significant impacts and failed to set out a clear framework for how significance is determined. No clear reasons are given for the assessment process. Reason no. 2 is inadequate as it fails to identify or specify any impacts or aspects of the proposed development which fall into the category of significance.

3. Construction noise and dust – EIAR informed by detailed noise modelling of construction and operation and details of proposed mitigation measures. Construction noise will be short term and temporary. TII standards for construction noise (70db(A) will not be exceeded at nearby residential receptors with application of mitigation measures. Detailed Dust Management Plan submitted as part of FI response and appropriate mitigation measures included in EIAR. In accordance with air quality guidelines, the construction phase of the development has been assessed in accordance with the IAQM Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014). Construction impacts on air quality are determined having regard to the magnitude of dust emissions and sensitivity of the area, with appropriate mitigation measures based on the likelihood of impacts. On the basis of IAQM Guidance, the proposed construction site dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Fugitive dust emissions at nearby sensitive receptors will be negligible.
4. Conflict with local access road – Section 11.5 of EIAR assesses the concerns raised by the PA. The applicant has installed the junction between the L-52452 and Páirc na Mara site entrance as part of the side development works undertaken prior to 2007. The remaining item of work, extinguishment of right of way from L-52452 onto R340, is a reserved function of the planning authority. Works are outside the boundary of the site and permission is not sought for these works. If further permission is required, the applicant will do so. The applicant has indicated that this section of local road L-52452 will be closed prior to any works being undertaken on site and that the applicant will obtain all required consents to do so. It is permissible for an applicant to apply for permission for development which is part of a wider project (e.g. wind farm developments which exclude grid connection), with the project as a whole subject to EIA.
5. Alternative sites – The PA was incorrect and unreasonable in its decision in respect of the applicant's assessment of alternative sites. In its assessment of the RFI the PA gave little weight to the criteria used for the assessment of

alternatives without explanation in the context of the Regional policy objectives. The PA ignored concerns raised by the site owner (Department of Agriculture, Food and Marine) regarding Ros a Mhil. The assessment of alternative sites was comprehensive, based on appropriate criteria in the context of national, regional and local policy objectives and the requirements of the Habitats Directive and the size, location and access to fresh water supply.

6. Flawed AA – PAs AA is flawed. Loughaunore, Lough Ierin and Lough Skannive are not located in Connemara Bog Complex SAC. Project will not give rise to loss of blanket bog or other peatland habitat from any European site. Bog Hair Grass is not a QI for any European site. PA incorrect to consider impacts on non-QI interests in their AA. Seaweed harvesting licensing and AA governed by another competent authority. PA incorrect in their assessment that the development would result in the intensification of seaweed harvesting. Sources of seaweed identified, sufficient for application. Inappropriate for PA to seek information on source of fish food and for all sources of seaweed as these are 'too remote' from the project (An Taisce v ABP no. 2, 2021 IEHC 422).
7. Flawed assessment of wastewater treatment and discharge – PAs conclusion that the development would result in discharge of effluent to marine environment contradicts evidence in EIAR that the state of the art WWTP technology will result in imperceptible concentrations of substances in discharges to Kilkieran Bay.

6.2. Planning Authority Response

6.2.1. None.

6.3. Observations

6.3.1. Twenty seven parties made observations on the appeal. These were for and against the development, summarised below.

Arguments for:

- Development is a low carbon eco marine innovation park, with potential for much needed employment and opportunities to west Connemara.
- Marine Parc will promote innovation and sustainable development of industry (low carbon, re-use of heat, circular businesses and maximisation of waste products).
- Páirc is a research and innovation hub for the marine industry, with potential for far reaching economic and climate change benefits. Steering group includes representatives of educational institutes, scientific research, enterprise development and sector development, government bodies.
- Development has potential to have a positive effect on climate change (research centre, controlling emissions from cattle with the use of seaweed, location of businesses involved in seaweed sector). Aquaculture significant supplier of marine based foods. Concept is based on clean energy and a Recirculating Aquaculture System (RAS).
- Development will reverse economic and social decline (out-migration), provide much needed jobs and support preservation of the Irish language. Development consistent with strategic policy documents for industry, rural Ireland, Gaeltacht areas and Project Ireland 2040 and with Údarás na Gaeltacht policy and draft Galway County Development Plan. Development is referred to in Central Connemara Language Plan as a priority project.
- Development has a minimal encroachment into a substantial Bay.
- Development consistent with National Planning Framework which highlights the potential of the bioeconomy in promoting more efficient use of renewable resources while supporting economic development and employment in rural Ireland. Páirc na Mara recognised in National Policy Statement published under NPF to drive sustainable growth of marine economy.
- Extinguishment of right of way from L-52452 onto the R340 is a reserved function of the local authority. Chair of Connemara Municipal Area has instigated the process. Traffic Safety Management Plan would solve road safety issue. Appropriate infrastructure is already in place on the site to facilitate the local authority in ensuring safe movement of traffic. Recently

developed public footpath from Chill Chiaráin village to the Páirc will improve safety and access. PA can develop traffic calming/island system at entrance to site to improve safety and access in and out of site entrance from R340 and L-52452. Village speed limits and digital warning signs could be relocated to eastern side of Páirc.

- Proposed buildings have been designed to highest standard, with community engagement, and will not detract from landscape. Benefits outweigh negative effects.
- Construction noise will be short term, will be within noise limits and can be controlled by construction management plan. These are not significant reasons to refuse permission.
- RAS technology allows discharge water to local governing bodies requirements and is located within a Marine Nature Reserve in Zeeland province, Netherlands. System requires little new water and wastes removed from recirculating water and used to produce seaweed (aquaponics) and organic fertiliser/compost. RAS systems differ significantly from conventional net cages.
- Reasons for refusal can be addressed by the bodies concerned and stakeholders. Matters raised concerning SACs and EIAR are significant and have been addressed by applicant.
- Ros a Mhil Harbour is not an appropriate location for Páirc na Mara (planned deep water pier, land required for offshore wind energy development).
- Alternatives – Area is an unemployment blackspot and is ideally located.
- Páirc na Mara has been designed by Údarás na Gaeltacht from a bottom up approach with seafood cooperatives/businesses and the community engaged from the start and would add significant value and benefits to local businesses who want to utilise the Bay on a sustainable basis.
- SAC - Community value the environment and integrity of Bay. Completed survey results indicate that the space selected for the development would not affect any annex 1 habitats. Minimal area affected. Much larger site area under ABP-301561-18 with no adverse effects on European site. RAS

system will ensure that the residual impact of the effluent discharge on the seabed will be negligible.

- EIAR – Development would have a positive effect on coastal population, marine sector and on biodiversity and climate change (use of seaweed, including as a cattle fed reducing greenhouse gas emissions). Building will integrate with landscape.
- PA decision infringes national policies and strategies to develop sustainable aquaculture in terms of infrastructure and employment.
- Matters raised by PA could be addressed by condition.

Arguments against:

- Inappropriate sensitive location, site at risk of flooding and precedent set by PL07.301404. Climate change increases the risk of flooding.
- Application fails to demonstrate the precautionary principle and the absence of adverse effects, consistent with provisions of EU Birds Directive, Habitats Directive and Water Framework Directive. National Climate and Biodiversity Emergency requires compliance with Directives.
- Salmon farming 'pollutes to produce' and is accelerating the loss of biodiversity through its impact on the environment. Proposed development includes a salmon farm supply depot.
- Salmon farming is short sited (artificial habitat, chemicals used to keep fish alive, disease control due to overstocking, lice infestation, dye to colour) and has adverse effects on wild salmon and sea trout (predation of smolts by sea lice blooms). Plundering of Wild wrasse to control seal lice. Issues of excessive lice in Kilkieran Bay (Department of Communications, Climate Action and Environment report 2019). Growing public awareness of unsustainability of salmon farming in open cages. Pressure on seas for extraction of species to make meal for fish farm species. Damage to salmon genetics from escaped fish. Real green, sustainable, renewable resource is own wild stocks of salmon, sea trout and brown trout through domestic and tourist angling, with economic and social benefits.

- Kilkieran/Carna Regional Water Supply at risk during drought. Likelihood of inadequate supply increases with proposed development. July 2021 mini heatwave resulted in major water shortage.
- Development would impact on watercourse that runs through the observers neighbouring farm land.
- Development should be refused on health and safety grounds due to impacts on humans.
- The Board is required to examine the planning application against the requirements of the Planning Acts, Environmental Impact Assessment Directive and Habitats Directive, including:
    - ABP must ensure compliance with articles 22 and 23 of Planning and Development Regulations 2001 (as amended) and assess the application in accordance with the Planning and Development Act 2000,
    - ABP must examine EIAR to ensure compliance to ensure full compliance in particular with article 4(4) of the Directive (description of project, aspects of environment likely to be affected and likely significant effects)
    - ABP must screen the development and carry out AA when appropriate.
    - ABP cannot grant permission if lack of certainty in information submitted (lacunae).
- Development does not comply with the requirements of the planning regulations. EIAR is not compliant with EIA Directive. Planning authority failed to carry out appropriate assessment of the development. It is not possible for the Board, having carried out its legal functions de novo, to grant a legal permission for the development.
- Do public notices comply with requirements, including that notices were in Irish (public participation). Concerns regarding availability of documents and ability of public to make comments.
- Application details in Irish limits ability of locals to engage in process.

- Unacceptable that EIAR not undertaken.
- Boards findings should be in English and Irish.
- Confusion if the case is an appeal of the decision made or a new application to the Board.

6.4. **Further Responses**

- Inland Fisheries Ireland (22nd October 2021) – IFI primary concern would be the possibility of interference with wild Atlantic salmon, sea trout and eel health and movement, as well as possible deterioration in water quality within the catchment during construction and operation. Species referred to are migratory and need unimpeded access to coastal and freshwaters. IFI make the following comments on the proposed RAS systems:
    - PnM includes a proposed 1.6 million post-smolt salmon facility. Applicant has stated that no new marine licences are to be sought for the deployment of smolt to sea rearing cages (only 2 of 24 sea farm licences currently operate in Kilkieran Bay).
    - As the other sites have not operated for >a decade any application will be regarded as new and undergo a full NIS/EIA and AA. IFI view is supported by recent Supreme Court judgement 2020 (not referenced) that renewals of aquaculture licences must include full EIA and AA where such farms can have an adverse impact on European sites.
    - IFI have expressed concern over a long time the detrimental effect of sea lice from salmon farming on wild salmon and sea trout stocks and have previously appealed salmon farm applications in the Bay.
    - It is imperative that IFI reived clarification on proposed destination of smolts to determine ecological impacts on wild salmon and sea trout.
    - In theory super-smolt facilities could have a positive impact on wild stocks by preventing transfer of sea lice to wild stocks, provided the adult farmed salmon were harvested out of sea pens by March thereby avoiding the wild Atlantic salmon and sea trout smolt runs.

- IFI would support RAS facilities to grow fish to marketable size completely on land.

7.0 **The Assessment**

7.1. Having examined the application details and all other documentation on file, including all of the submissions received in relation to the appeal, and inspected the site, and having regard to relevant local/regional/national policies and guidance, I consider that the main issues in this appeal are as follows:

- Status of the case.
- Public notices/document availability/public participation.
- Compliance with the Planning and Development Regulations 2001 (as amended).
- Policy context.
- Precedent and flood risk.
- Public safety (L-52452).
- Construction noise and dust and impact on residential amenity.
- Adequacy of EIAR, environmental impact assessment and the assessment of cumulative and in-combination impacts (including on the water environment, public water supply, WFD and wild salmon).
- Adequacy of NIS, appropriate assessment and effects on European sites (including cumulative effects in Kilkieran Bay).

7.2. The adequacy of the applicant's EIAR, the PAs environmental impact assessment and the likely environmental effects of the development are considered in the EIA section of this report.

7.3. The adequacy of the applicant's NIS and the PAs appropriate assessment and the likely effects of the development European sites are addressed in the Appropriate Assessment section of this report.

7.4. Planning Assessment

Status of the Case

7.4.1. Parties to the appeal questioned the status of the subject case if it was an appeal to the Board or a new application to the Board.

7.4.2. It is evident from the information on file, that the applicant has made an appeal to the Board under the Planning and Development Act 2000 (as amended). In submitting the appeal, the applicant provided an updated version of the EIAR and NIS reports with further information on the matters raised in the planning authority's decision to refuse permission. On the 5th October 2021 the Board requested that the applicant provide revised notices in respect of the proposed development, in English and Irish. These notices indicated that the appeal was accompanied by a revised EIAR and revised NIS.

Public notices/document availability/public participation.

7.4.3. In the course of the planning application and appeal concerns have been raised regarding the adequacy of public notices (written in Irish), the period for consultation given the volume of material accompanying the application/ appeal and delays in making the material on the PAs website.

7.4.4. The proposed development is situated in the Gaeltacht where Irish is widely spoken. In this context it is not unreasonable that the application is made in Irish, although ideally I would accept that dual notification would be ideal. In this regard, the most recent notices required by the Board have been written in both English and Irish, albeit with the description of the development remaining solely in Irish.

7.4.5. Notwithstanding the above, the applicant has carried out significant public consultation in respect of the proposed development (section 2.5 EIAR) and submissions on the application and appeal have been made by a large number and wide range of parties, raising arguments for and against the development across a range of topics. I am satisfied therefore that the purpose of the public notices has been served.

7.4.6. Further, I am satisfied that between the timescale of the planning application and appeal, parties have been afforded time to examine the project documentation and

to give proper consideration to it and that all of the matters raised by the public can now be considered by the Board.

Compliance with Planning and Development Regulations 2001 (as amended)

7.4.7. An observer to the appeal (Wild Ireland Defence clg) state that the Board is required to ensure that the Board examine the application to ensure that it complies with the Planning and Development Regulations 2001 and Articles 22 and 23 of the Regulations in particular.

7.4.8. The planning authority is responsible for the validation of planning applications and no specific matters have been raised by the observer or other parties to the appeal in respect of how the planning application does not comply with the requirements of the Regulations or these articles in particular.

Policy Context

7.4.9. Parties to the appeal support the location of the proposed development at the site arguing that it will bring much needed economic, social and linguistic benefits in an area which is experiencing depopulation. It is stated that the PA's decision is at odds with the policy context for the development which supports the sustainable development of aquaculture.

7.4.10. Others raise concerns regarding the sensitive location of the proposed development and the need for it, given the location of other marine research facilities in Connemara and Sligo. Observers also raise concerns regarding the substantial nature of the development and the need for a strategic approach with informed public consultation.

7.4.11. The national, regional and local policy context for the proposed development, summarised in section 5.0 of this report, is one that recognises the economic and social issues facing rural, coastal and Gaeltacht areas in the country and the contribution that the marine sector makes to these areas. Policies clearly supports the growth and development of the marine sector, subject to environmental safeguards, including collaboration, innovation and the sustainable development of aquaculture, marine based resources, the development of the circular bio-economy and seaweed harvesting.

7.4.12. Specific policies at regional level support the development of Páirc na Mara as a regional asset with the potential to provide infrastructure and facilities to support the establishment and expansion of a cross-section of marine enterprises.

7.4.13. Locally the Galway County Development Plan recognises the social and economic benefits of aquaculture and the marine sector in rural and coastal communities and supports the development of these subject to environmental safeguards and respect for ecological limits.

7.4.14. Within this context, I am satisfied, that the location of the proposed development is consistent with its policy context and that the proposed development should be considered on its merits.

7.4.15. The EIA section of this report comments further on alternative sites, alternative layouts and technologies.

Precedent and Flood Risk

7.4.16. Precedent. Parties to the appeal refer to the Board's previous decision to refuse permission on the subject site for (1) a 45sqm administrative building to accommodate 2 no. offices, canteen, toilet, (2) temporary sewage holding tank and (3) related site works, including connection to existing services within Marine Park (PA ref. 17/1780 and ABP-301404). Permission was refused by the Board for the following reason:

> '*Having regard to the planning history of the site, the location of the site in an area at risk of flooding, the nature of the proposed development which includes the installation of a temporary foul water storage tank below existing ground level (as shown on Drawing Number PL/FI/01), the proximity of the tank to a stream which discharges to the Glenaruid River, which in turn discharges to Kilkieran Bay approximately 860 metres downstream of the proposed site, and notwithstanding the site-specific flood risk assessment submitted by the applicant in response to the section 132 notice, the Board was not satisfied that the proposed development would not adversely affect the integrity of the European Site Kilkieran Bay and Islands Special Area of Conservation (Site Code 002111). Accordingly, the Board is precluded from granting permission'*.

7.4.17. In this instance, the application differs significantly from that previously proposed, in terms of scale, layout and associated infrastructure. In particular it includes an exclusion zone around the area of the site likely to be subject to flooding and provides measures to prevent upstream and downstream flooding. Having regard to these factors, I consider that the subject development is demonstrably different to that proposed under ABP-301404 and should be assessed on its merits.

7.4.18. Flood risk. The Government's guidelines flood risk management (The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009) set out certain principles for managing flood risk in development proposals. These include avoiding inappropriate development in areas at risk of flooding and avoiding new developments creating a risk of flooding elsewhere. The guidelines recommend a staged approach to flood risk assessment with a more detailed assessment depending on flood risk and development type.

7.4.19. Appendix 8.7 of the EIAR provides a Site Specific Flood Risk Assessment of the proposed development. It assesses the existing flood risk to the site, identifies mitigation measures to alleviate flood risk at the site and informs the appropriate finished floor and road levels and layout of the development.

7.4.20. The appeal site, adjoining Kilkieran Bay is a coastal site. Further, a number of watercourses cross the site and these are shown in Figures 3-2, Photo 3.9 and Figure 5-3 of the EIAR. They comprise:

- The main stream crossing the site, Loch na Sióg stream (Coill_Sáile_10), travels from to west to east carrying water from Loch na Sióg to the west of the site to Kilkieran Bay via Glenaruid River (c.0.45km to the east of the site). The stream flows through a shallow valley in the northern section of the site. It crosses under Páirc na Mara access road via a culvert and continues in a north easterly direction where it discharges into a floodplain/wetland area within the site. A minor tributary draining from a catchment to the north of the site also drains to the wetland area. From the wetland area, the stream drains via a stone culvert under the local road to the east of the site.
- A number of minor drains within and upstream of the proposed development site.

7.4.21. The FRA initial and preliminary flood risk assessments refers to historic flooding upstream of the site (between XS30 and Culvert B, Figure 3-2), in the wetland area of the site (between culverts C and D), the road at culvert D (where the was previously frequently flooded prior to installation of 2 no. 0.6m pipe culverts) and the low lying fields downstream of culvert D. The south eastern boundary of the site is stated to be liable to tidal inundation and at risk of flooding from extreme high water levels associated with storm surges, wave set-up and extreme spring tides. Having regard to this, the FRA recommends a design high water level of 5.65m OD (2m above the current scenario of 3.65m, 1 in 200 year (0.5% AEP), and 0.75m above the 1 in 100 year (0.1% AEP) High End Future Scenario high water levels. Calculations are based on OPW data – see page 14 FRA). Surface water run off from PnM site is generally towards the main channel Loch na Sióg. The FRA identifies potential for the site to drain directly onto local road at a private residence to the north of the site (location M on Figure 5-1).

7.4.22. Reflecting the observations in respect of fluvial and coastal flooding, the draft OPW Preliminary Flood Risk Assessment indicates a risk of fluvial flooding and coastal flooding of the site (see Figure 3-7).

7.4.23. Risk of fluvial flooding is further assessed via hydrological and hydraulic assessment. It calculates likely flood flow in the main stream and north stream, using different methodology and adopts, conservatively, greatest flood flow estimates. Using these calculations the flood risk assessment provides a hydraulic model for the main stream to allow the site floor risk assessment to be confirmed for Qbar, Q100, Q100+CC and Q1000 flood events (Table 4-3). Drawing no. 2490-P-FRA-001 (Appendix A) indicates the modelled pre-development flood zones (Zones A and B) and respective levels across the site. Figure 4-3 indicates the calculated hydraulic flood profile (Qbar to Q1000) for the existing scenario, Loch na Sióg stream through the development site.

7.4.24. Having regard to the modelling exercise, and the risk of flooding on the site and adjoining lands, the Report makes recommendations to upgrade the main stream channel and culverts within the subject site (section 4.2.6 and 5.6.1), retain the current floodplain storage volume within the site between Culvert C and D, to install a flow control structure upstream of new culvert D to optimise attenuation at Páirc na Mara and to direct existing overland flows from upland streams into the upgraded

stream channel (i.e. flows that already discharge into the stream) and run-off from the development site to the stream or the sea as appropriate by drainage works (Table 4-5 shows predicted rainfall for site for different storm return periods). Works to the main channel include regrading the section of the stream between XS30 and culvert C making it wider and increasing side slopes to ensure that flood flows are conveyed in the channel only. Flood alleviation measures (upgrading or clearing of drains and maintenance of channels), are also proposed downstream of PnM to mitigate any potential negative impacts due to the proposed development and to manage flood risk within the development boundary and downstream lands (page 33, EIAR).

7.4.25. The hydraulic model for the site, amended to include flood alleviation works, is shown in Figure 5-2 (flood flows and levels) and Figure 5-3 (calculated hydraulic flood profile). The effect of the proposed works is to prevent the development giving rise to any significant upstream and downstream fluvial flooding, with modest increases in downstream flows during flood events (section 5.6.2), and to provide an area of undeveloped flood plain within the application site (reduced flood zone areas A and B are shown in drawing 2490-P-RFA-002, Flood Zone Mapping Fluvial Post-Development, Appendix A).

7.4.26. With regard to coastal flooding, in section 5.7 of the report it is stated that at the south eastern end of the site the reinforced concrete sea wall (see Figure 5-4) will have a level of >10.6mOD, providing >3.8m above the proposed design coastal extreme water level for the site (see above) and >4.5m above the HEFS 0.1%AEP coastal extreme water level for Kilkieran Bay. The wall will be constructed in Flood Zone B (above the 3.65mOD contour line and Coastal Flood Zone A) (seed Flood Zone Mapping Coastal Pre-Development and Post-Development, Drawing no. 2490-P-FRA-003/4).

7.4.27. Section 4.3 deals with pluvial flood risk. It is stated that storm water from hard surfaces will drain to the existing storm drainage system. It recommends that this (the existing storm drainage network) is assessed in order to confirm if it is appropriate for extreme rainfall events (Table 4-5), with a pluvial risk assessment to be undertaken for the site to identify if any of the individual development site areas are at risk. It also recommends all buildings be finished floor levels be 0.2m higher than the adjacent access road and hard standing areas. Chapter 8 of the EIAR

states that there will be little increase in run off from the development site as run off from the existing undeveloped site is high.

7.4.28. Taking a precautionary approach, the report recommends locating all buildings and infrastructure in flood zone C and treated as 'Highly Vulnerable Development' with a significant freeboard (Table 5-5). These include WWTP utilities, open tanks and holding tanks located >30m from the coastal boundary, with a finished road level of >9.5mOD.

7.4.29. **Assessment**. The appeal site lies in a coastal environment and is traversed by Loch na Sióg and is subject to coastal, fluvial and pluvial flooding. The applicant's flood risk assessment captures the existing pattern of flooding and flood risk in the area of the site and adopts a conservative approach to the likelihood of future coastal, fluvial and pluvial flooding. The flood risk assessment makes recommendations that provide a development which is consistent with the Government's guidelines on Flood Risk Management, i.e. avoiding inappropriate development in areas at risk of flooding and avoiding new developments creating a risk of flooding elsewhere.

7.4.30. In effect, applicant presents an engineered solution to the development of the site, where existing and future flood risk is managed largely by flow control mechanisms and the location of structures outside of predicted or managed flood risk zones. Notably flow control measures include the regrading of the river channel between XS-30 and culvert C, replacement of culvert C with a more significant structure, retention of the flood plain storage volume between culvert C and D and management of outflows from culvert D.

7.4.31. The engineered solution is necessary given the physical characteristics of the site and its inability to accommodate the quantum of development without flood risk. Whilst it could be argued that the site is inherently unsuitable for development of the scale proposed, I am satisfied that from a technical perspective, the matter of flood risk has been adequately addressed. Issues with regard to location are addressed elsewhere in this report.

7.4.32. I note also that the PA generally accepts that the matters raised have been addressed in respect of flood risk have been adequately assessed (concerns remain in respect of mitigation measures for seawall construction).

Public Safety (Traffic)

7.4.33. The planning authorities fourth reason for refusal is:

> '*Due to the existence of an existing local road (L-52452) in close proximity to the proposed entrance, but outside of the planning unit of the current application, and in the absence of any agreement with the roads authority and /or other parties with an interest in this route, for closure of this section of the road, the Planning Authority is not satisfied that the proposed development, in including the intensification of use associated with the proposed development, in conjunction with an existing entrance and local road to the north would not create undue potential for conflicting traffic movements. It is considered therefore that the proposed development would present undue potential for the creation of dangerous and conflicting traffic movements and would accordingly be prejudicial to public safety. The proposed development would therefore be potentially prejudicial to public safety and would accordingly be contrary to the proper planning and sustainable development of the area.*'

7.4.34. Parties to the appeal argue that the matter can be addressed via the reserved functions of the local authority, traffic management plan and/or traffic calming at entrance to the site.

7.4.35. The applicant argues that the reason for refusal is unreasonable on the grounds that it has been fully assessed in the EIAR, the works are outside the boundary of the site and the applicant is not seeking permission to carry out these works, consent from the landowner and permission for the works will be sought, if required, absence of permission for these works is not an impediment to a grant of permission and extinguishment of right of way, is a reserved function of the local authority.

7.4.36. The site of Páirc na Mara lies immediately south of a local road which provides access to a small number of dwellings and agricultural structures and to the shore of Kilkieran Bay. At the northern end of the site, the minor road forms a simple T-junction with the site access road. However, a short length of the minor road continues parallel to the site access road, to join the R340. The arrangement creates two junctions with the R340 in close proximity to each other.

7.4.37. Section 11.5.1 of the EIAR addresses this issue. It accepts that the extinguishment of the right of way and removal of direct junction of the L-52452 with the R340 was

not completed as part of earlier works. It also acknowledges that the informal junction arrangement could lead to possible conflicts in traffic and states that it is proposed that the existing 'informal' arm of the L-52452 that directly joins the R340 be closed, with access to the dwelling via the internal access road serving the appeal site. This arrangement is shown in drawing no. 2490-P-SL-R-01.1Rev B. However, the drawing is entitled 'Road Layout and Longitudinal Profile 01. Existing Road. No changes proposed'

7.4.38. In principle, I would accept that the current arrangement where both the access to the appeal site and L-25452 join the R340, with intensification of the use of the appeal site, is unsatisfactory and could give rise to conflicting traffic movements and would be prejudicial to public safety. I am mindful that the planning application area for the subject development does not extend to these lands and that a subsequent planning application is likely to be required to address the matter, alongside extinguishment of the existing right of way. However, as the matter is one which is within the control of the local authority (extinguishment of right of way) and as the applicant has acknowledged that a further planning application may be required to carry out these works, I consider that the matter could be dealt with by condition, i.e. that prior to the commencement of development, direct access to the R340 to local road L-52452 shall be extinguished.

Construction Noise and Dust and Impact on Residential Amenity

7.4.39. The planning authority's third reason for refusal is:

> *'The Planning Authority is not satisfied that the proposed development by reason of deficiencies in terms of construction noise mitigation and dust mitigation measures, would not have an undue impact on the residential amenities of nearby residential properties. The proposed development would accordingly be contrary to the proper planning and sustainable development of the area'.*

7.4.40. Parties to the appeal, in favour of the development, argue that construction noise will be short term, within noise limits and strictly controlled by Construction Management Plan.

7.4.41. In response the applicant argues:

- Detailed noise modelling was undertaken to inform the design. Evidence provided in Chapter 12 of EIAR (Noise and Vibration) demonstrates that noise and vibration impacts during construction and operation, with mitigation measures, will not give rise to undue impact on residential amenity. Construction noise will be short term and temporary and occur in stages throughout the 4.5 year construction phase for Phase 1 and 2 and not for the entire 4.5years (as stated in PA assessment of RFI point 12).
- The appropriate standard for construction noise is 70dB(A) as set out in TII Guidelines for the Treatment of Noise and Vibration in National Road Schemes (2004). Noise modelling exercise shows one property where this limit is likely to be exceeded, with 72.3dB(A) when there is rock breaking in proximity to the property for a period of c.2.6 days (see section 12 of response to appeal, Grounds of Appeal – Detail). Mitigation measures (acoustic screen) will reduce levels to <70dB(A) Leq,1hr.
- PA have no concerns regarding operational noise impact.
- A dust Management Plan submitted as part of the RFI, based on parameters for location of the development, predicted Construction Air Quality Standards and appropriate mitigation measures (Chapter 10 EIAR). Dust assessment, mitigation measures and dust management plan follow industry guidance documents. There are no deficiencies in the dust management plan.

7.4.42. Chapter 10 of the EIAR deals with **Air Quality**. Section 10.4.6 predicts construction air quality impacts, including dust. The assessment is carried out in accordance with the document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IQAM, 2014), as advised in Environmental Protection UK and the Institute of Air Quality Management's guideline document '*Land use Planning & Development Control: Planning for Air Quality'*.

7.4.43. Potential Dust Emission Magnitude is predicted having regard to the nature of the proposed development (nature and extent of demolition, earthworks, construction and trackout) and the criteria set out in the IAQM guideline document for small, medium and large dust emission classes (Table 10.23, EIAR). Predicted dust emission magnitudes are:

- Demolition - Zero.

- Earthworks - Large.
- Construction - Large.
- Trackout - Large.

7.4.44. The assessment omits the removal of existing derelict house on the site during Demolition, but includes the limited demolition works under Trackout. Otherwise the assessment is reasonable and conservative.

7.4.45. Sensitivity of area is assessed having regard to criteria set out in the IAQM guidance document which includes the specific sensitivities of receptors in the area, proximity and number of receptors, background PM_{10} and site specific factors e.g. natural shelter, trees (Tables 10.25 to 10.27, EIAR). There are two sensitive residential properties less than 20m from the site boundary, a further 6 no. within 100m of the site, 7 no. within 200m and 12 no. within 350m of the site (Table 10.28). Predicted dust sensitivities are:

Sensitivity of People to Dust Soiling

- Construction and earthworks – Medium.
- Trackout – Low.

Sensitivity of the Area to Human Health Impacts

- Construction, earthworks and trackout – Low (based on good background PM_{10} concentrations and number of properties in vicinity of site).

7.4.46. Dust emission magnitude and sensitivity of the area are combined to provide an assessment of the likely Risk of Impacts from demolition, earthworks, construction an trackout before mitigation. This is summarised in Table 10.30 and **ranges from zero** (dust soiling and human health effects during demolition[4]) to **medium** (dust soiling during earthworks and construction).

7.4.47. The IAQM guidelines state that the guidance document provides a framework for the assessment of risk. However, it cautions that every site is different, and the guidance cannot be too prescriptive. It therefore advises on professional judgement and a precautionary approach. The Risk of Impacts identified by the applicant,

[4] Ecological effects are also considered. These are addressed in the EIA and AA sections of this report.

follows the methodology for the assessment of Risk of Impacts and is not unreasonable given the relatively small number of receptors in the area of the site, background air quality and nature and extent of works i.e. I consider that it reasonably predicts up to medium effects in advance of mitigation.

7.4.48. Mitigation measures are proposed based on the risk category identified i.e. Medium Risk Site. Measures include communication with stakeholders, a Dust Management Plan, site management (to include record keeping, complaints, incidents etc.), monitoring, planning and managing the site to minimise dust, managing operator behaviour (vehicles) and operations to minimise dust. Specific measures are also proposed for trackout (e.g. keeping roads clean, dampened down). Measures reflect those set out in the IAQM guidelines for each stage of the development and are repeated in a draft Dust Management Plan is included in Appendix 6, Chapter 3 EIAR. With the implementation of mitigation measures, air quality impacts (dust soiling and human health) are considered to be negligible.

7.4.49. In response to the RFI, and reflected in their decision to refuse permission, the planning authority raised concerns regarding the absence of specifications for dust suppression measures and the robustness, therefore, of these measures, with the potential for effects on sensitive receptors (residential properties and ecological receptors).

7.4.50. Construction air quality and dust management measures are set out in pages 155-156, EIAR (Dust Management Plan). These include standard and good practice measures in respect of communication, site management, monitoring, operation of vehicles and equipment and which apply to the site as a whole. Site specific measures e.g. planning of site layout to locate dust causing activities away from receptors, erection of screens/bunds around dusty activities, are referred to but not detailed in the Dust Management Plan. Whilst this would be ideal, in order to prevent risks to nearby properties, Section 9 of the IAQM guideline document, 'Step 4: Determine Significant Effects', reflects the efficacy of dust suppression measures. It states '*For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'*.

7.4.51. I consider therefore that the applicant has adhered best practice in assessment methodology and has adequately demonstrated that there is a low risk of adverse effects from dust soiling or from particulate matter on residential receptors. Site specific measures can be addressed in a Dust Management Plan, to be agreed with the planning authority in advance of works.

7.4.52. Chapter 12 of the EIAR deals with construction noise and vibration. It refers to EPA guidelines and British Standards for noise impact assessment, provides information on the results of baseline noise monitoring (Table 12.4 - Summary results of noise monitoring), predicts likely noise to arise during construction and operation and compares these noise levels against EPA noise limits and WHO guidelines for community noise.

7.4.53. Having regard to background noise monitoring and EPA guidelines the site is deemed to be in an 'Area of low Background Noise' and EPA recommended noise limits of 35-45dB apply (see Table 12.5). Nearest properties lie north, south and west of the site (R1, R4, R6 and R7), with low levels of background noise.

7.4.54. Target daytime construction noise levels of 65db $L_{Aeq,T}$ are proposed, based on the assessment of background noise and the methodology for assessing construction noise limits, set out in the BS document. Maximum noise levels of 70dB $L_{Aeq(1hr)}$ and 80dB $L_{pA(max)slow}$ (Monday to Friday 7am to 7pm) for construction sites are referenced from TII publication Guidelines for the Treatment of Noise and Vibration in National Road Schemes (2004).

7.4.55. Noise arising from construction activity is predicted in Table 12.9, with exceedances of daytime construction noise target level of 65dB $L_{Aeq,T}$ at closest residential receptors R1 and R4, occurring when works take place within 20-40m of the dwellings. Rock blasting has been designed out of the development, with the levels requiring only rock breaking to c.1m. In total it is estimated that 1 machine would be required to work 78 days, or 2.6 months to carry out all of the rock breaking activities for Phase 1 and 2. Noise from rock breaking has been assessed at 8 representative locations, assuming 1 no. 32 tonne rock breaking machine is in operation. Results are shown in Figures 12.2 to 12.4 and 12.10 (EIAR) i.e. predicted noise levels at nearest sensitive receptors with no mitigation. The results indicate that TII construction noise limit 70dB $L_{Aeq(1hr)}$ may be exceeded at properties SR 1 and SR 4

when rock breaking is in closest proximity to the properties and when there is no mitigation.

7.4.56. Subsequent to the analysis, the applicant referring to site investigation results, re-evaluated where rock breaking would be required and omitted locations RB3, RB4 and RB5. Revised Table 12.10 (Updated) indicates possible exceedances of TII maximum noise levels at SR1 only, for a duration of up to 2.6 days (associated with volume of rock to be removed from RB8). It is stated that up to 10dB of noise reduction can be attained by erecting an acoustic screen between the source and the receiver location where the line of sight between source and reception point is obscured. Mitigation measures are detailed on pages 26 to 28 of the EIAR (Chapter 12). These include deployment of a mobile acoustic screen (3mx2.5m) between the rock breaking and receiving location and reference to consequential reductions in noise by up to 10dB(A) as set out in Table B.1 of BS5228-1 (see attachments). Other mitigation measures are liaison with neighbouring properties, noise and vibration monitoring (with weekly report), noise control audits and use of least noisy plant.

7.4.57. The applicant states that with mitigation, actual noise from rock breaking will be less than 70dB $L_{Aeq(1hr)}$ at SR1 and the other nearest residential receptors and, as stated, will occur for 78 days in Phase 1, between months 7 and 10 of the first year of construction only.

7.4.58. HGV movements associated with construction are assessed in section 12.4.3.1 of the EIAR (page 33). The number of HGV movements per day range from 2 (Phase 2) to 5 (Phase 1), with a conservative peaking factor of 3.5 i.e. 17 HGV in and out per day (a total of 34 HGV movements per day). Vehicle numbers are based on incoming materials as no excavated material is to be removed from the site (page 33). The noise impact of passing HGVs on the R340 is considered to be transient and short term at receptor locations in the area. Noise impacts are predicted to be insignificant given the relatively modest traffic arising from the development in the context of volume of traffic on the regional road.

7.4.59. The EIAR states that HGVs entering the site will travel at lower speeds than those on the R340 and that traffic flows on the R340 will continue to dominate road traffic

noise in the area, such that there is no perceptible change in road traffic noise (a doubling or halving of flows would result in a perceptible change of 2dB(A).

7.4.60. Operational noise is predicted at nearby sensitive receptors in Table 12.12 for day and night time, with and without HGV traffic. Operational noise is less than 40dB(A) during day and night time but will exceed this level with intermittent daytime traffic movements. Maximum noise levels are less than 50dB(A) at any receiver.

7.4.61. Relative to existing background levels, the EIAR predicts adverse to significant adverse effects at nearest residential receptors (Table 12.13). However, daytime noise is less than WHO guidelines for daytime noise (50-55dB(A) for outdoor living areas and for nightime noise levels for reported sleep disturbance (40DB $L_{night, outside}$).

7.4.62. Mitigation measures for construction and operation are set out in section 12.5. These include standard practices to minimise noise during construction (restricted hours of work, low on site speeds, use of quiet working methods, use of silencers etc.). For operation, the EIAR noise barriers are proposed in 2 locations, along the northern boundary of the site (85m) opposite R1 and along the southern boundary of the site (350m) to the north of R2, R3 and R4. These are predicted to reduce noise levels at properties by 5dB compared to levels shown in Table 12.12.

7.4.63. **Assessment**. The appeal site lies in a rural area with low levels of background noise. Inevitably construction activities will generate short term noise during working hours. The applicant's assessment of construction activity reflects this, with short term noise effects from individual activities when carried out in proximity to nearest receptors. The applicant does not present a cumulative impact assessment i.e. if all activities are carried out in proximity to a residential receptor at one time. However, given the different activities proposed, this type of cumulative effect is unlikely. Notwithstanding this, noise from construction activity is likely to be significant for short periods at nearest residential receptors. With mitigation measures, mobile acoustic screens for rock breaking, noise arising from this source will be within acceptable limits, but nonetheless impact for the short term on nearby residential receptors. Given the relatively modest number of construction vehicles, HGV noise is unlikely to cause a significant change to background road traffic noise levels. However, they will add to noise at nearby receptors, within the construction site.

7.4.64. With operation, I would accept that the applicant has demonstrated that noise will not exceed levels likely to be significant or cause adverse effects on outdoor life or sleep. Notwithstanding this, the noise environment enjoyed by residents in the local area, in the immediate area of the site will change significantly and this would be an adverse effect of the development that should be acknowledged and is likely to result in a deterioration in residential amenity in the area, if not sufficient to warrant refusing permission for the development.

7.5. Environmental Impact Assessment

Introduction

7.5.1. I have carried out an examination of the information presented by the applicant, including the EIAR, and the submissions made during the course of the application and appeal. A summary of the reports made by the planning authority and submissions by observers, prescribed bodies and the appellant have been set out in previous sections of this report. The main issues raised specific to EIA are:

- Adequacy of EIAR and level of information and assessment in relation to impacts on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape, and interactions between the foregoing.
- Adequacy of the environmental impact assessment.
- Assessment of alternatives.
- Impact of water abstraction on Lough Scainnimh and Lough Ierin (including on public water supply).
- Use of freshwater supply.
- Impacts on humans (including noise, dust, socio-economic effects).
- Cumulative effects (including on wild fish species, sustainability of fish feed production, seaweed harvesting).
- Impact on protected sites (national sites, shellfish waters).
- Impacts on/capacity of local road infrastructure.
- Disposal of waste.

7.5.2. These issues are addressed below under the relevant headings. Impact on European sites addressed under Appropriate Assessment.

7.5.3. I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR and supplementary information provided by the developer, adequately identifies and describes the direct, indirect and cumulative effects of the proposed development on the environment and complies with article 94 of the Planning and Development

Regulations 2000, as amended. I note that no exceptional difficulties were encountered in compiling the EIAR. Specific topic related issues are referred to in the specific topics.

Alternatives

7.5.4. The appeal site is situated in a sensitive environment. It is proposed to abstract seawater and discharge treated waste water into Kilkieran Bay, a designated European site and designated Shellfish Waters, and to abstract water from Lough Skannive which directly adjoins Connemara Bog Complex SAC and Natural Heritage Area. Parties to the appeal question the location of the development in the sensitive setting.

7.5.5. The applicant's rational for the development of the site at the subject location is the planning permission granted for Phase 1 of the marine park, the construction of this in 2005, the location of the development in an area of low employment, within an area where there is already a cluster of marine enterprises, the potential to provide employment, consolidate and expand activities in the existing cluster and to develop new sustainable marine based activity via a research and development hub.

7.5.6. The EIAR examines the 'do nothing' scenario and alternative sites within 15km of the subject site. The do nothing scenario is considered to be a significant and negative scenario, with the inefficient use of the brownfield site, continued trend of economic decline in the area and decline of the site itself (Japanese knotweed present, further deterioration of existing services).

7.5.7. Alternative sites within the vicinity of the appeal site are examined against project criteria (page 4-6 EIAR). The criteria set out area site availability, site area (>12ha), proximity to coast, ability to access freshwater and main road network and located in a Gaeltacht area. The criteria cited are not unreasonable given the remit of the state applicant and project objectives.

7.5.8. Alternative sites are ruled out on the grounds that they do not meet all of the criteria, notably size, access to road network or access to freshwater. Land owned by the applicant at Ros a Mhil, c.16km to the south east of the appeal site, is considered but discounted on the grounds of size of landholding and permission secured by the Department of Agriculture, Fisheries and Marine for a deep-water jetty at the port and their objections to development that would be contrary to the jetty and related

support activities. The applicant also raises concerns regarding the co-location of commercial fishing and boating activity and the potential for pollution events with implications for the clean water activities anticipated at Páirc na Mara. Other uses on the subject site have been discounted on the basis of absence of synergies with local population/marine based industry and strategic objectives which support the development of the maritime economy and seafood sector, particularly in remote rural communities (NPF, Objective 39) and specific regional policy objectives for the development of a marine resource innovation park at Cill Chiaráin in the RSES for the northern and western region (RPO 4.34).

7.5.9. Alternative layouts are considered in section 4.1.3.4 of the EIAR with the resultant layout arising from the proposed uses, associated technical requirements, landscape, visual and amenity effects. Alternative technology is also explored with rationale for the RAS, aquaponics facility, WWTP technology, use of renewable energy and construction methodology, driven primarily by reduced environmental effects and opportunities for synergies. Alternative sources of freshwater are explored on pages 4-18 EIAR, including groundwater abstraction, rainwater harvesting, desalination, surface water abstraction from Loch na Síog and Glenaruid River System. Alternatives were discounted on the grounds of inadequate supply, cost/water chemistry issues, construction of infrastructure and impacts on river systems and Annex I habitat.

7.5.10. The alternatives explored by the applicant are reasonable having regard to the requirements of the EIA Directive to describe '*reasonable alternatives'* and national guidelines (Draft Guidelines on the Information to be Contained in an EIA, EPA 2017) which require the applicant to '*present a representative range of practical alternatives*'. Further, the applicant has set out an indication of the main reasons for choosing the preferred scenario it in terms of location, design, technology and source of freshwater.

7.5.11. Having regard to the foregoing, I am satisfied that the applicant has provided a description of reasonable alternatives which are relevant to the project and its specific characteristics and an indication of the main reasons for the option chose, taking into account the effects of the project on the environment.

Population and Human Health

7.5.12. **EIAR.** Chapter 6 of the EIAR provides an assessment of the likely effects of the development on population and human health. As per the EPA Guidelines on Information to be contained in EIARs (EPA, 2022) the EIAR considers the effects of the development on employment, human health (with reference to other headings of the report – air quality, noise and vibration) and amenity.

7.5.13. Baseline data on population in the area is provided under Irish language (high number of speakers), population trends (declining), population density (low), household statistics (above average increase in number of households) and age profile (65+ increasing). Employment is described in terms of percentage employed against national/regional trends (less than state average), labour force (high unemployment rates locally) and socio-economic group (professional services, agriculture, forestry and fishing).

7.5.14. Under human health the EIAR refers to other sections of the report which address issues with potential effects on human health (Biodiversity, Water Quality, Air Quality, Traffic, Noise and Vibration) and presents baseline data on the disadvantage nature of the local area and the links between unemployment and mental health. The data indicates high levels of deprivation in the immediate area of the site.

7.5.15. Amenities in the area include a number of third level outreach education/marine research facilities in the wider Gaeltacht area. Tourism is identified as contributing substantial revenue to the region. In the local area tourism resources include angling, sea fishing and accommodation.

7.5.16. Potential impacts are considered under do-nothing, construction and operation. Do nothing would result in the existing infrastructure at the site remaining under-utilised and falling into disrepair and the opportunity to create employment in an unemployment black spot, lost. Short term positive impacts arising during construction include an increase in employment locally and economic benefits for the construction industry (e.g. local sourcing of materials/workers) and local economy (e.g. increase in household spending, demand for goods/services). Short term negative effects are disruption to economic activity (e.g. with construction traffic, access to the village/local businesses, noise and dust from activity), the effects of noise and dust from construction activity on the local population, short term closure

of playground whilst it is relocated within the Páirc, restricted access to all weather pitch and risk to water bodies impacting on fish stocks in Lough Skannive and Kilkieran Bay.

7.5.17. Operational phase impacts include long term positive effects on employment in the area with economic benefits (e.g. increased household spending, demand for goods/services). Potential impacts on human health arise from noise and vibration from the site and deterioration in water quality in Kilkieran Bay (used for fishing, recreation).

7.5.18. Mitigation measures (also referred to in other Chapters of the EIAR) include:

- Relocation of the play park to the western corner of the park, to be served by a separate entrance, to allow uninhibited access during construction,
- Traffic Management Plan for the duration of construction to minimise effects on traffic mobility,
- Construction Environmental Management Plan, to minimise environmental nuisance during construction including noise, dust and effects on water quality,
- Production of WWTP treated effluent to the required standard and disposal at sea to ensure negligible impact on sea water quality and monitoring of discharge to ensure no deleterious substances present at a level that could negatively affect receiving waters,
- Abstraction of water from Lough Skannive such that no adverse effects on the public water supply arise.

7.5.19. Subject to application of mitigation measures, the EIAR predicts no significant adverse residual impacts population and human health (construction or operation) and a long term positive effect on the local population and economy. No predicted cumulative effects are anticipated.

7.5.20. **Submissions and observations.** Parties to the planning application and appeal support the development of the marine park with its potential for employment opportunities in the traditional marine sector, associated economic and social benefits including positive effects of the development on local population levels and the Irish language (increase in Irish speakers). Parties point to the short term nature

of construction phase of the development and means to control construction effects via Construction Management Plan/best practice standards.

7.5.21. In contrast, other submissions raise concerns regarding the availability of jobs locally (skills match), socio-economic effects (housing, language, schools), effects of the development on population and human health during construction and operation, including the Carna-Kilkieran Regional Water Supply Scheme and impact on wild fish stocks (tourism).

7.5.22. In appealing to the Board, the applicant states that the 26 'Expressions of Interest' in the Pairc would result in c.200 direct jobs and c.400 indirect an ancillary jobs. Skill profile would be 30% highly skilled, 40-50% moderately skilled and the remainder low skilled, plus construction work (page 12 or appeal).

7.5.23. **Assessment.** The proposed development is situated in an area where there are high levels of unemployment. The proposed development is based on traditional marine industries associated with the area and proposes the creation of a platform for cross-business, cross-sectoral collaborations to enhance and utilise natural resources creating products and services leading to increased sales and exports. 70% of jobs projected are in the Biotechnology and bioproduct sector, 18% in marine based nutrition and 11% in Marine technologies (page 12 of appeal).

7.5.24. In principle, I would accept that as an innovative marine park, the development has the potential to provide employment locally, bolster the local and regional economy in a traditional sector and provide associated social, economic and linguistic benefits.

7.5.25. Having regard to the discussion elsewhere in this assessment, with regard to the likely effects of the development on local residents and the environment, I would be concerned regarding the following impacts on population and human health:

- Short term effects on nearby residential properties as a consequence of noise during construction.
- Long term effects on nearby residential properties as a consequence of increased noise during operation and significant alterations to the landscape character of the area.
- A risk to public water supply, given the absence of assessment of the effects of climate change in the catchment (discussed below).

- Long term positive social, economic and linguistic benefits.

7.5.26. **Conclusion.** Having regard to the foregoing and in the absence of further information I am not satisfied that the subject development will not give rise to significant effects on population and human health by virtue of potential effects on the public water supply. I do not consider that the short term effects of the development on local residents (during construction) or the change to the local noise environment or landscape character are reason to refuse permission for the development, given the short term nature of effects and/or the wider benefits for the area. For reasons stated elsewhere in this report I do not consider that significant adverse effects would arise in respect of water quality (with wastewater discharge) including cumulative effects with fish farming in Kilkieran Bay. (The risk of flooding on adjoining lands is addressed in the Planning Assessment with no potential for adverse effects).

Biodiversity – Consider impact of development on shellfish waters

7.5.27. **EIAR.** Chapter 7 of the EIAR deals with biodiversity. It assesses the potential for significant effects under the following headings and having regard to the three main components of the development, Páirc na Mara Innovation Park, water abstraction from Lough Skannive and Lough Ierin and construction of marine outfall and seawater intake:

- Aquatic ecology (watercourses, transfer pipeline, peatland restoration),
- Terrestrial ecology (abstraction infrastructure, transfer pipeline, peatland restoration), and
- Marine ecology (seawater intake and treated effluent marine outfall).

7.5.28. The assessment is based on best practice guidelines for survey work, field and desk survey (Table 7.1) and CIEEM's Guidance on Ecological Impact Assessment (2018). It is also informed by consultations with the NPWS (Appendix H). Assessment of likely effects on European sites is considered by the applicant in the Natura Impact Statement. The assessment of potential ecological impacts uses the impact significance scale defined in Table 7 and Figure 3.5 of the EPAs Guidelines to be Contained in Environmental Impact Assessment Reports (draft, 2017), from Imperceptible to Profound.

Aquatic Ecology (section 7.3, EIAR)

7.5.29. The proposed development has hydrological connectivity with Connemara Bog Complex SAC/proposed Natural Heritage Area (site code 002034), which borders Lough Skannive to the northwest, and with Kilkieran Bay and Islands SAC, via Lough na Síog stream which outfalls into Kilkieran Bay downstream of the PnM site. The water abstraction development on Lough Skannive also has surface water hydrological connectivity to Kilkieran Bay and Islands SAC via the Dooletter East River (EPA code 31D15) which also outfalls to the SAC at Mweenish Bay (see Figure 7.3, EIAR). These freshwater waterbodies and watercourses which could be affected by the development, including connected rivers and streams are shown in Table 7.2 and Figure 7.3, EIAR.

7.5.30. Survey work included habitat surveys (river and lake), fish surveys (including baseline survey of wider Lough Skannive catchment – Appendix A), biological water sampling, physiochemical water quality analysis and macro-invertebrate survey. Results of aquatic surveys are presented for each lake Loughaunore, Lough Ierin, Lough Skannive, Lough Sheedagh and the riverine sites. Evaluation of sites, based on aquatic survey, is summarised in Table 7.9. Waterbody evaluations range from County Importance to International Importance, for the following reasons:

- Lough Skannive, International Importance – Macrophyte community considered to be a good representation of Annex I habitat '[3110] Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)*'. Given this presence and as Lough Skannive forms a boundary with Connemara Bog Complex SAC/pNHA, lake evaluated as International Importance. Brown trout and Red-listed European eel also present.
- Lough Sheedagh, National Importance – Due to presence of viable Annex I habitat [3110]. Brown trout and Red-listed European eel also present.
- Loughaunore and Lough Ierin, County Importance, due to presence of examples of Annex I habitat [3110]. Brown trout and Red-listed European eel also present.

7.5.31. Watercourse evaluations ranged from Local Importance (higher value) to Local Importance (lower value). Higher values were assigned at sites 2, 3, 5, 6, 7, 8 and 10 given the presence of healthy brown trout and/or Red-listed European eel

populations. A higher value was assigned at site 4 (Dooletter River East) as it supported Atlantic salmon, brown trout and Red-listed European eel. Sites 1 and 9 were evaluated as lower importance due to their incapacity to support resident fish and low value as European eel migratory pathways. Survey locations shown in Figure 7.3.

7.5.32. Potential impacts, as a consequence of construction of abstraction and pipeline infrastructure and of Pair na Mara, are direct disturbance to the aquatic environment (e.g. lakeside/lakebed, instream works), deterioration in water quality (ground works, storage of materials, spillages) and risk of spread of invasive species.

7.5.33. *Freshwater abstraction infrastructure* includes an abstraction pipe and pumping station (Lough Skannive), rising main to Lough Ierin, abstraction pipe and pumping station (Lough Ierin), rising main and culvert crossings (Lough Ierin to Pairc na Mara) and freshwater storage reservoirs at Pairc na Mara (see Table 7.10, Figures 7.19 and 7.20). In the absence of mitigation, impacts are considered likely, significant negative short term local impacts on Lough Skannive, Lough Sheedagh (not significant indirect effects) and Lough Ierin and likely, significant negative medium term local impacts on the aquatic ecology of watercourses.

7.5.34. *Construction works at Pairc na Mara* include site clearance and excavation (c.23,759m^3 peat, c. 23,517m^3 rock all to be reused within the site), provision of site compound, storage of building materials, construction of all infrastructure (including surface water outfalls to stream crossing the site), utilities, services, roadways and proposed facilities, including freshwater storage tanks. Adverse effects on the watercourse running through the site could arise from groundworks, with increases in suspended solids in runoff, contamination with petrochemicals, cement etc. and spreading of invasive species. Such effects would pose a threat to water quality, fish, macrophyte and macroinvertebrate communities. In stream works are also proposed as part of flood alleviation works i.e. deepening and straightening a short section of the stream to the west of the existing internal access road and upsizing the two culverts as the stream leaves the site and addition of flow control structure (no. 8, Figure 7.21). These works will affect the existing stream habitat (removal of substrata and disturbance to riparian areas) and local salmonid and Eel populations (temporary dewatering). Contamination of stream water could also arise from

instream works (increase in sedimentation and hydrocarbons). In the absence of mitigation, impacts are predicted to be likely, slight negative, short term and local.

7.5.35. Key operational effects may arise from abstraction from Lough Skannive and Lough Ierin, flood alleviation works and surface water drainage at Pairc na Mara.

7.5.36. Freshwater abstraction infrastructure impacts, *in advance of mitigation* are predicted as follows:

- Ingress of fish into abstraction mains. Likely, long term imperceptible impact on fish mortality at abstraction intake, Lough Skannive and Lough Ierin.
- Hydrological impacts of water abstraction infrastructure. Likely, long term positive effect on fish passage downstream of Lough Ierin due to construction of new fish pass and likely, medium to long term moderate negative impacts on fish passage in watercourses if replacement culverts operate poorly.
- Impacts of water abstraction on riverine fish (i.e. upstream and downstream passage of salmonids in Dooletter River East). Likely, medium to long term moderate impacts on Dooletter River as a result of abstraction from Lough Skannive (with abstraction affecting discharge rate from Lough Skannive to Dooletter River and therefore flow rates in river with effects on migrating species). Likely long term, significant impacts on brown trout and European eel population of the Lough Ierin outflow stream (i.e. increase in number of days when no flow from Ierin to Lough Skannive).
- Brown trout (including sea trout) and European eel. Likely long term and not significant impacts on Brown Trout in Lough Skannive and Lough Sheedagh, and likely long term and imperceptible impacts on European eel, as a result of the annual average maximum drawdown level of c.5cm i.e. no significant deviation from baseline fluctuations. Likely long term, significant impacts on lacustrine (lake) spawning Brown Trout within Lough Ierin due to decrease in water levels. Likely, long term imperceptible impact on fisheries in Lough Loughaunore due to water abstraction (no proposals to alter water levels in Loughaunore basin).
- Artic charr. Likely, long term imperceptible impacts (given absence of species from targeted winter surveys).

- Macrophytes including Annex I lake habitat [3110]. Annex I habitat well represented in Lough Skannive and to a lesser extent in Lough Sheedagh. More fragmented and localised examples in Lough Ierin and Loughaunore. Greatest threat to habitat comes from high water abstraction during very low lake level conditions. As predicted water level decreases as a result of abstraction are well below the mean annual average water fluctuations for Lough Skannive during the modelled period (2013-2018) potential operational effects to littoral macrophyte communities of Lough Skannive and Sheedagh, including examples of Annex I habitat [3110] are predicted to be likely, long term and slight. Impacts on macrophyte communities in Loughaunore and Lough Ierin are predicted to be likely, long term and slight negative.
- Lake residence time and trophy. Lake residency time can increase with water abstractions with effects on nutrient uptake etc. Predicted change in lake time residence as a result of abstraction from Lough Skannive and Lough Sheedagh is predicted to be equivalent to 0.4% from baseline, an insignificant change. Thermal effects of changes in water level e.g. light penetration and increased turbidity are predicted to be slight negative, long term. Projected changes in water levels in Lough Ierin will cause likely long term, slight impacts to lake ecology (higher water level fluctuations predicted, but lower ecological value).

7.5.37. Works at Pairc na Mara are considered to have the following effects, *before mitigation:*

- Flood alleviation and culverts. Incorrect culvert and flow control structure (culvert nos. 7 and 8) may impede passage of salmonids and European eel within the Lough na Síog stream, alter local hydrology, increase erosion and stream velocities with indirect effects on aquatic receptors. Operation of the two newly constructed culverts is predicted to be likely, medium to long term moderate impact.
- Surface water drainage. Increased outfall from surface water drains to Lough na Síog stream may increase rates of erosion during high rainfall events and an increase in carried pollution. Untreated surface water discharged to the stream is predicted to have a likely, long term moderate impact.

- Wastewater infrastructure. To be discharged to Kilkieran Bay, with no impacts on surface waters (Lough na Síog stream) during operation. (Impacts assessed under Marine Ecology).
- Invasive species risk. Long term moderate impact of introduction of invasive species to wider aquatic environment adjoining Páirc na Mara should species escape from containment.

7.5.38. Cumulative effects are considered in section 7.3.8.8 of the EIAR i.e. cumulative effects arising from water abstraction from Lough Skannive and Lough Ierin for Páirc na Mara site in conjunction with Irish Water abstraction from Lough Ierin, with effects on water levels in Lough Ierin, Lough Skannive and Lough Sheedagh, flow regimes of downstream riverine catchments and affected Annex I lake habitat, invertebrate communities and migratory fish such as Atlantic salmon and European eel. These are predicted to be likely, moderate negative and long term on the basis of predicted demand and modelled water level changes.

7.5.39. *Mitigation measures* for construction and operation are set out in sections 7.3.8.9 and 7.3.8.10 of the EIAR. Construction mitigation measures include:

- Detailed Construction and Environmental Management Plan (Appendix 3.2, CEMP) and detailed arrangements for construction work alongside watercourses and construction of freshwater infrastructure, for example, with use of cofferdams to install in-water works on land and floating silt curtains, water management systems and frequent sampling of water quality (Appendix 3 of CEMP). It is stated that the document is a dynamic one, to be updated as the project progresses and monitoring of mitigation measures and on-going consultation with NPWS and IFI throughout all phases of works.
- Invasive Species Management Plan (Appendix 1, CEMP).
- Location of the Lough Skannive intake pipe where there is limited presence of indicator species representative of Annex I habitat [3110] 'Oligotrophic waters containing very few minerals of sandy plans (*Littorelletalia uniflorae)'*, presence of an aquatic ecologist when laying the pipe to ensure minimal impact on Annex I habitat and footprint of abstraction main pipeline to avoid overlap with sensitive littoral (lake shore) sites and timing of works in line with IFI guidelines to minimise impacts on aquatic habitats.

- Low velocity intake pump at Lough Ierin to prevent intake of fish and sediments. Location of footprint of abstraction main pipeline and penstock (to raise existing overflow level) to ensure does not overlap with sensitive littoral (shallow areas near shore) areas including Annex I habitat [3110]. Construction of new Eel pass system outside of sensitive salmonid period, as per IFI guidelines.
- Construction of pipeline and culverts in accordance with IFI and NRA standards (section 7.3.8.9.7 EIAR) and specific measures in respect of culvert 7 and 8, where most significant works are required.

7.5.40. With the implementation of mitigation measures, the EIAR concludes that construction impacts on ecology will be short term and not significant.

7.5.41. Mitigation measures for the operational stage of the development include:

- Water abstraction at PS1 (Lough Skannive pump station) subject to stringent water level controls to ensure no significant impacts on both lake and riverine fisheries, sensitive habitats and WFD ecological status. No abstraction when lake levels are less than 95%ile levels (baseline scenario), minimal abstraction rates between 95%ile and 75%ile lake levels (baseline scenario). Maximum average monthly drawdown of c.6cm in November and average monthly drawdown in summer of 2.5cm. The magnitude of the drawdown and the reduction in overall lake's surface area resulting from abstraction is predicted to be very low, with insignificant residual impact on lake hydrology and residence time.
- Monitoring of lake water levels and lake macrophyte communities of littorals of Lough Skannive and Sheedagh. If significant changes to Annex I habitat [3110], abstraction rates to be revisited (water balance model) and amended as appropriate, so no deviation from baseline.
- Location of abstraction pipe to not overlap lacustrine spawning areas of salmonid fish, low flow intake pipe to prevent fish and sediment intake.
- Abstraction from Lough Ierin to not exceed 1.5m drawdown in summer months and moderate increase in depth in winter (<0.5m).

- Abstraction rates within UKTAG flow change rates, with no impacts on flows in Dooletter East River.
- Installation of a fisheries compensatory flow system to ensure that flow rates in Lough Ierin outlet channel are available in stream throughout the year.
- Petrol interceptors for surface water outfalls in Páirc na Mara, attenuation of flows and direction of relevant flows to wastewater treatment plant.
- Design of replacement culverts to IFI and TII standards.

7.5.42. With implementation, impacts on Lough Skannive and Lough Sheedagh are considered to be likely, long term and not significant as a consequence of water abstraction. Impacts on Lough Ierin will be likely, long term and slight negative. Impacts to aquatic ecology and fisheries of the Lough Ierin outlet channel are considered to be likely, long term imperceptible to slight positive. Impact of works to culverts to be likely, long term and not significant.

Terrestrial Ecology

7.5.43. Section 7.4 of the EIAR assesses the potential impacts of the development on terrestrial ecology i.e. land based ecology of sites directly and indirectly affected by the development. It includes the area potentially affected by nitrogen deposition resulting from air emissions due to seaweed processing alone and in combination with the effects of seaweed processing from other production facilities within the zone of influence of the development.

7.5.44. Based on desk study and field surveys, the EIAR describes the habitats, presence of invasive species, fauna and flora present in the study area; lakeshores of Lough Skannive, Lough Sheedagh, Lough Ierin and Loughaunore, the intake and pumping stations sites, pipeline route and Pairc na Mara site. Habitat maps are shown in Appendix E. The map does not extend to the full pipeline route (for a section of the public road).

7.5.45. In summary the site is evaluated as follows:

- Lake margin habitats and pipeline route are part of a habitat complex of national importance for biodiversity (contain viable area of Habitat Directive Annex I habitats, including blanket bog and heath). (N.B. The uphill part of

the Lough Skannive pumping station site provides, in part, potential habitat for Marsh Fritillary a qualifying interest of the Connemara Bog Complex SAC).

- Habitats within the PnM site are of local importance (higher) for biodiversity (contain Annex I habitats, blanket bog and heath and salt marsh, but significantly less than %age threshold of county total for conservation importance).
- Population of Bog Hair-grass along margins of Lough Sheedagh (Figure 7.40) of national importance for biodiversity (represents at least 1% of national population and is a Near Threatened species).
- Fauna in study area of local importance (higher value), given size of study area, abundance of habitat in wider area and absence of rare or protected fauna in field surveys.

7.5.46. Potential impacts as a result of construction and operation arise from:

- Construction - Direct loss or damage to habitats and flora, disturbance to fauna, spread of invasive species.
- Operation - Changes in lake level fluctuations causing changes to habitat composition and loss of protected flora, nitrogen deposition damage to habitats, permanent loss of habitat for fauna and fragmentation of faunal habitats due to installation of replacement culverts on Loch na Síog stream.

7.5.47. In the absence of mitigation, the following impacts are predicted for do nothing, construction, operation and cumulative effects:

- Do nothing. Continuation of present land use/management regime with persistence of some habitats in good condition and others at risk of deterioration (scrub encroachment in dry heath and grassland at Pairc na Mara).
- Construction. Loss or disturbance of habitats and flora at Lough Skannive and Lough Ierin pump stations and along the pipeline route which form part of bog and heath habitats of national importance (Annex I habitat), with moderate negative effect (664sqm permanent, 6,348sqm temporary). Loss of habitats of local importance (higher value) at Pairc na Mara, including some priority Annex I habitat, active blanket bog and other Annex I habitats (e.g. dry

heath and wet heath – see Table 7.18), with significant permanent negative effect on biodiversity at local scale. Slight negative effects on biodiversity at the local scale are predicted over the short term as a result of disturbance to fauna. In the absence of mitigation, significant negative effects on biodiversity at the local scale are predicted arising from the risk of invasive plant spread having regard to populations observed along route of pipeline and in vicinity of Lough Skannive pumping station.

- Operation. Increasing winter water levels at Lough Ierin are predicted at worst case to have a slightly negative effect on biodiversity at local scale (habitats and flora affected have low biodiversity value). Potential impacts on terrestrial ecology along shores of Lough Skannive and Sheedagh may arise from disruption of natural winter flooding regime. Impact of reduced water levels along the shores of Loughs Skannive and Sheedagh on bog hair-grass populations and lakeshore vegetation communities predicted to be imperceptible, due to very modest changes in lake levels. Mean monthly reduction in water levels in Lough Skannive and hydrological connected Lough Sheedagh during autumn and winter months (Sep-Feb) are predicted to range from 1.9cm to 6.1cm (greatest reductions 4.2cm-6.1cm in September and October) (Tables 8.2.12-13, Chapter 8, EIAR). Maximum reductions in water levels to be up to 15cm in 1-2 week periods (Figures A8.6.10-11, Appendix 8.6, EIAR). Natural fluctuations in Loughs Skannive and Sheedagh are much greater, over 1m from minimum to maximum (Figure A8.6.3).

  Impact of increased nitrogen deposition at Carna Heath and Bog NHA is predicted to be imperceptible given the low percentage increase and total deposition remaining below critical load.

  Habitat loss (10.33ha at Pairc na Mara and smaller areas at Lough Skannive and Lough Ierin pump stations) is predicted to give rise to a moderate negative local effect on biodiversity, given the abundance of similar habitats in surrounding area.

  Habitat fragmentation, arising from replacement of two culverts at Pairc na Mara is predicted to have a moderate, local negative effect on biodiversity (may make it more difficult for otter to move along linear habitat).

- Cumulative effects. Potential for in-combination effects with abstraction by Irish Water and PnM with ecological effects associated with water level changes in Lough Ierin, Lough Skannive and Lough Sheedagh. For Lough Ierin effects are predicted to be imperceptible as increased drawdown would have limited effects on terrestrial ecology. For Loughs Skannive and Sheedagh, cumulative reduction in natural winter flooding is predicted to have a slight negative effect on biodiversity at local scale. However, it is acknowledged that in the worst case scenario, if populations of bog hair-grass were affected, this could result in very significant negative impacts in the absence of mitigation. The EIAR identifies no other developments permitted in the area with the risk of cumulative effects.

7.5.48. Section 7.4.6 of the EIAR sets out mitigation measures in respect of terrestrial ecology. These include an Ecological Clerk of Works (ECoW) on site as part of the management team to contribute to and oversee the implementation of the CEMP and ecological mitigation measures (including control measures to prevent spread of invasive species). Other measure in respect of terrestrial ecology include:

- Marking or temporary fencing of development boundaries.
- Use of bog mats in wet weather/poor ground conditions.
- Revegetation of disturbed areas from seedbank and natural colonisation.
- Off-site compensatory Bog Restoration Plan for 16.3ha of cutover blanket bog, within Connemara Bog Complex Sac, c.22.6km east of Pairc na Mara. Drains to be blocked and peat cutting embankments reprofiled (Appendix G). The restoration of the site is proposed to compensate for the loss of undesignated blanket bog and associated Annex I peatland habitats at Pairc na Mara.
- Stringent control of abstraction from Lough Skannive, with detailed monitoring and continuous updating of water balance model as hydrological data is collected.
- Bog hair-grass monitoring within the site boundary of Lough Skannive pump station and freshwater intake works, with micro-siting of intake pipes in the event that species is found at intake works location (not present at time of

field survey) and strict exclusion zones to avoid plants or temporary translocation of plants (under licence from NPWS). Baseline monitoring of existing populations and subsequent monitoring at 1, 2, 3, 5, 7, 10 and 15 years post operation. If monitoring shows decline, additional measures to include reducing abstraction during key periods, introduction of one way valve where drawdown at Lough Skannive would not result in drawdown at Lough Sheedagh.

- Use of scrubber system to reduce ammonia emissions at seaweed added value facility. Imperceptible to slight negative short term effects on biodiversity having regard to background nitrogen deposition levels and reduced use of coal burning in wider environment.
- Design of culverts in accordance with TII guidance to facilitate use of culverts by mammals.

7.5.49. With the implementation of mitigation measures, no significant impacts are predicted in respect of terrestrial ecology (see Table 7.19 EIAR).

Marine Ecology

7.5.50. Section 7.5 of the EIAR provides an assessment of the likely effects of the development on marine ecology within Kilkieran Bay and Island SAC. The assessment is based on underwater survey work carried out between July 2019 and August 2021 at 8 no. locations in the vicinity of the proposed outfall and intake pipes (Figure 7.41 EIAR). With multivariate analysis carried out on benthic infauna and an assessment of benthic ecological quality.

7.5.51. The baseline environment of Kilkieran Bay refers to the strong tidal streams that are present in the Bay giving rise to high levels of turbulence, dilution, disturbance and transport of sediment. This environment results in the continuous shifting of algae, infauna (live and burrow in the sediments) and epifaunal (live attached to a surface) invertebrate species around the seabed. The marine habitat is acknowledged as being of very high conservation value, with a high diversity of species, rare species and others considered to be worthy of conservation reflected in its status as a Special Area of Conservation (see Appropriate Assessment).

7.5.52. Section 7.5.4 refers to mitigation measures, including:

- The very high levels of treatment planned for the Pairc na Mara site (Table 7.20, EIAR), in conjunction with high velocities and associated turbulence levels that occur in Kilkieran Bay, and very low levels of nutrients from the facility will have an unmeasurable impact on eutrophication (enrichment in particular by nitrogen and phosphorus).
- Low concentration dosing of sodium hypochlorite will take place at the intake, by injection (to prevent biofouling). The weak solution just after the screen will prevent loss of disinfectant to sea. Dosing solution will also be drawn into the intake pipe, with little leak into the marine environment.
- Air sparging system, where short blasts of high pressure air are delivered to the intake to remove bio-fouling from outside of the screen.
- Given the high levels of dilution and dispersion that occur in Kilkieran Bay, sodium hypochlorite and sloughed off biofouling material will be rapidly diluted and dispersed to imperceptible levels within a short distance of the pipe.

7.5.53. Projected residual and cumulative impacts are considered in section 7.5.5. These are:

- Do nothing. Kilkieran Bay to continue to function as is.
- Construction:
    - Habitat loss, temporary loss of 8m^2 of sea floor from punch out areas at intake and outlet pipelines i.e. 0.0008ha of the marine habitats in Kilkieran Bay. Given modest area affected, no impacts on structure or function of marine community predicted. Location of punch out sites selected so that they do not coincide with loss of Zostera marina habitat or Maërl beds (underwater diver with GPS signal emitter to control punch out location at time of directional drilling). Marine environment will disperse sediment and drilling muds released into water column when directional drill breaks through the water column. No noise impact on marine invertebrates (no auditory appendages), may move away from noise source/retract into shells/tubes/burrow with vibration. Unlikely effects on marine mammals (shallow depth of works) and predicted noise levels from directional drilling and screen

cleaning (Appendix I, Chapter 7, EIAR). Otters typically unlikely to be present on site during working hours. No Otters or Harbour Seal recorded during ecological survey in the area of the site.

- Other potential contamination. Hydrocarbons, suspended sediments and accidental spillages to be controlled at Páirc na Mara by appropriate management plans, as set out in the CEMP.

- Operation:
  - Habitat loss, 0.66m^2 permanent loss (intake/outlet sites). Given modest area affected, no impacts on structure or function of marine community predicted.
  - Eutrophication. Considered to be insignificant given the low level of nutrients in the effluent from the site (WWTP and surface water discharge to Lough na Síog stream) and physical oceanic conditions thereby preventing any build-up of nutrients and eutrophication and no ecological impact on the water column or seabed (rapid dilution and dispersion rates modelled in Appendix K). UV disinfection of domestic waste effluent discharge to reduce E. coli to less than 1000no/10ml, further reducing the risk to Shellfish status of the waters and residual impact of treated effluent on the ecology of the water column to negligible.
  - Fish entrapment and biofouling of intake pipes. The report identifies a risk of small/juvenile fish entrapment at screen/mesh of intake pipe is identified, with potential to change size and structure of fish populations and communities.
  - Low concentration/dosing of sodium hypochlorite (above) to clean the intake screen from biofouling.
- Cumulative impacts. Existing fish farms in Kilkieran Bay (16 sites, ranging from 3.8-25.2ha) produce nutrients, nitrogen and phosphorus. Small number of licences for scallop and rope mussel farming in Kilkieran Bay (no active mussel farms currently). However, no evidence of eutrophication in scientific research with fish farms (section 7.4.5.1 EIAR) and no cumulative impacts

predicted between the fish farms, scallop or mussel farming and the treated wastewater from proposed development, primarily due to strong current velocities, high levels of turbulence, dilution and dispersion and low levels of nutrients in proposed effluent. No other geophysical site investigation surveys planned for Kilkieran Bay in same period as proposed development, and therefore no potential for sonic cumulative effects.

7.5.54. The EIAR concludes that there will be no significant residual impacts on marine diversity of Kilkieran Bay.

7.5.55. **Submissions and observations.** Parties to the planning application and appeal raise concerns regarding the effect of the development on the ecology of the freshwater systems and marine environment. In particular, concerns are raised in respect of the likely effect of freshwater abstraction on the ecology of affected lakes and streams (including in the context of up to date climate modelling), impact of noise and vibration from directional drilling on crustaceans, the cumulative effects of the development with fish farming in Kilkieran Bay (including lack of clarity where farmed smolts will be transferred to), effects on wild fish stocks (including effects arising from fish feed for farmed salmon on marine species) and the sustainability of seaweed harvesting.

7.5.56. Others refer to the minimal area of marine habitat affected and precedent set by the Board under ABP-301561 for a larger site in a sensitive habitat

7.5.57. In their assessment of the planning application the planning authority also raise concerns regarding the effect of abstraction on the ecology of related waterbodies, the robustness of construction mitigation measures in the CEMP to mitigate effects on water quality (including of underwater noise arising from drilling and effect of hydro blast cleaning system), in-combination effects including with existing aquaculture development, effects of seaweed harvesting and feedstocks for the facility, the distance of bog restoration site from development (to offset local impacts) and the ability to carry out such works within a designated SAC without further consents (this matter is considered in the AA section of this report).

7.5.58. **Assessment.**

7.5.59. Precedent. Under ABP-301561 permission was granted by the Board for modifications to existing jetty and quays and phase expansion of port estate, at

Foynes, County Limerick. Part of the site was located in a European site. Assessment of the proposed development was carried out in the very site specific context of the development and likelihood of ecological/environmental effects. I do not consider that this decision by the Board therefore sets an appropriate precedent for the proposed development.

7.5.60. Aquatic ecology. The applicant has carried detailed assessment of baseline aquatic ecology likely to affected by the infrastructure abstracting freshwater from Lough Skannive and transferring it to Pairc na Mara. Potential impacts are methodically and thoroughly identified and assessed. Mitigation measures are detailed and include construction management practices for works in Lough Skannive, Lough Ierin, monitoring, oversight and reporting. Absence of significant construction impacts are construction predicated on control of potential emissions during construction (e.g. sediments, hydrocarbons), siting of in-lake infrastructure and construction of culverts to established standards. Absence of significant operational impacts are predicted on stringent control of water levels within Lough Skannive, Lough Ierin and Loughaunore, close monitoring and alteration of abstraction in the event of unpredicted/adverse effects.

7.5.61. *Water quality*. The applicant's CEMP is set out in Appendix 3.2 of the EIAR. Appendix 3 of the CEMP provides details on the proposed Freshwater Management System measures for the freshwater supply scheme for the PnM and Appendix 4 the Water Quality Management System for PnM. Measures included in the CEMP are standard good practice and in respect of freshwater supply and PnM site are detailed and site specific (and explicitly exclude sheet piling). I am satisfied that subject to implementation of these measures, no significant adverse effects on water quality as a consequence of construction works are likely to arise.

7.5.62. *Water quantity*. It is evident from the information presented by the applicant and supported by Irish Water, as set out in Hydrology section of this report below, that there is limited capacity to extract water from Lough Skannive without impacting on ecology. This 'threshold' is indicated to be 4.8MLD and subject to this limit, and detailed abstraction limits at different times of the year, the EIAR concludes that adverse effects on Lough Skannive, Lough Sheedagh, Doolittle River East, Lough Ierin and Loughaunore will not arise.

7.5.63. From the detailed, scientific assessment that has been carried out I am satisfied that subject to adherence to the extraction regime proposed, significant adverse impacts on freshwater ecology are unlikely to arise (impacts on terrestrial ecology are considered below). However, as discussed in subsequent sections of this report (Water section – EIA and AA section), I have the following concerns:

- In the applicant's meeting with the EPAs catchment team (19th December 2019), the EPA stated that it would be advisable to undertake climate change vulnerability analysis of the proposed abstractions, to include for projected summer drought conditions and their impact. Given the limited capacity of the Lough Skannive system, the vulnerability of the ecology to significant changes in water levels, the estimated future demand for the public water supply (which IW acknowledge could increase) and the freshwater supply required by PnM I consider that the effect of climate change on predicted water levels within Lough Skannive is an important part of the assessment of likely effects of the development (abstraction regime) on the environment. There is no reference to any such assessment in the EIAR or in the NIS and it would appear that the applicant's assessment of the Lough Skannive catchment is based on a model which does not have regard to the effects of climate change. In the absence of this data, and therefore the potential for fluctuations in water levels in the Lough (and catchment) with climate change, I am not satisfied that abstraction from Lough Skannive have been adequately explored or that these potential in-combination effects will not have an adverse effect on aquatic ecology.

- The projected maximum requirements for IW and PnM in 2044 is 5.195MLD for normal year annual average (NYAA), and 5.953MLD for dry day critical period (DDCP) (see below on impacts on water). The applicant has indicated that they would be willing to enter into an operational agreement where public water supply is guaranteed, and they have indicated the manner in which the supply to PnM can be reduced in general and in dry periods (see Water section below). Notwithstanding this undertaking, I am concerned that the proposed development would place a 'practical' strain on the waterbodies within the catchment, with potential economic implications for PnM or social pressure for increased supply with ecological effects. Whilst the applicant

undertakes to reduce volumes of freshwater supply to threshold levels, I question if it is reasonable to grant permission for a development is beyond the limit of the natural environment to accommodate.

7.5.64. Terrestrial ecology. The applicants assessment of terrestrial ecology and the potential for negative effects is based on detailed survey work, site specific construction methodology, Bog hair-grass and water level monitoring programme, (with the latter feeding into the continuously updated water balance model) and strict adherence to an abstraction regime which maintains water levels within predicted limits. Having regard to these arrangements I am generally satisfied that the development would not have an adverse effect on terrestrial ecology. However, for the reasons stated above, I would be concerned that the absence of modelling for climate change may have underestimated effects of water level changes within Lough Skannive and the terrestrial ecology on the shores of Lough Skannive. Whilst the applicant's proposed close monitoring of water levels and effects on the Lough together with proposed mitigation measures, may prevent adverse impacts, I do not consider that it appropriate to grant permission for the development in the absence of data on potential effects of climate change on water availability.

7.5.65. The applicant proposes proposals for a compensatory Bog Restoration Plan to offset the loss of undesignated blanket bog and associated Annex I peatland habitats on the Pairc na Mara site. I note the planning authority's concern that this lies outside of the planning application area and is likely to require further permissions. The applicant acknowledges this point but includes the project in order to facilitate holistic environmental impact assessment. The DHLG&H welcome the restoration proposals and I consider that they will improve the conservation condition of the habitat (blanket bog) and the potential to compensate for the loss of these habitats on site.

7.5.66. Marine ecology. The applicant's assessment of likely effects of the proposed development on marine ecology is based on the structure and function of Lough Kilkieran and detailed survey work of the location of the abstraction and outfall pipes. Absence of effects are based essentially on the modest size of intake and outfall pipes, detailed construction methodology (including directional horizontal drilling and diver controlled location of punch out locations to avoid sensitive habitats), very high level of treatment proposed for the waste water treatment plant and the high levels of

dilution and dispersion that occur within Kilkieran Bay. For the reasons stated in the EIA - Water section of this report, I am satisfied that effluent can be treated to a high level and will not result in eutrophication of waters (including in low flow conditions), and I am satisfied that construction methodology can reduce impacts on the marine environment to less than significant. Noise and vibrational effects of drilling are likely to be modest (see Noise section of this report and Appropriate Assessment) and short term.

7.5.67. Cumulative effects.

- The cumulative effects of the development in conjunction with existing aquaculture in Kilkieran Bay (including transfer of smolts), on wild fish stocks and as a consequence of seaweed harvesting are considered in the AA section of this report. It is considered, for the reasons stated, that no adverse cumulative effects on water quality or on seaweed habitat will arise.
- Transfer of smolt. IFI have raised concerns regarding the destination of smolts from the salmon RAS unit and the potential for adverse effects of lice from farmed salmon on wild salmon and trout. The applicant states that no new licences are to be sought for the deployment of smolts to sea rearing cages. In practice, any facility for smolts would require to be licenced and subject to assessment of environmental and ecological effects by the appropriate statutory body. Further, in response to the appeal IFI acknowledge that in theory a super smolt facility could have a positive impact on wild salmon stocks by preventing the transfer of sea lice to wild stocks, with adult farmed salmon moved out of sea pens by March, thereby avoiding the wild Atlantic salmon and sea trout smolt runs.
- Fish feed. The appellant refers the Board to case law where the courts have decided that certain indirect effects of a project, such as the source of milk for cheese production, are outside the scope of EIA as ‘the were too remote’ (An Taisce v ABP, no. 2, 2021, IEHC 422; An Taisce V ABP, 2021, IEHC16). It is argued that sources of fish feed are too remote for the purposes of AA and EIA. Given that the production of fish feed is controlled by other legislation and is not directly affected or influenced in form by the proposed development, I am minded to be guided by case law in this instance and

consider that the production of fish feed, and the consequence of this for fish stocks, albeit an important issue, lies outside the scope of this appeal. Similarly the disposal of sludge and dead fish, to be disposed of off site to licenced contractor, will be subject to regulation in downstream facilities.

7.5.68. **Conclusion in respect of biodiversity.** Having regard to the foregoing, notably the absence of the assessment of climate change on water levels in Lough Skannive (and its catchment), I am not satisfied that the subject development will not give rise to adverse effects on freshwater and terrestrial ecology as impacts on water levels may have been underestimated.

7.5.69. ***Land, soil, water, air and climate***

Land and Soil

7.5.70. Chapter 9 of the EIAR deals with land, soils and geology. It's assessment of the proposed development on these factors is based on desktop study and baseline surveys carried out during walkover survey and site investigations. Results of site investigations carried out in February 2019, for the Pairc na Mara site, are set out in Appendix 1 of the Chapter. Investigations include 13 no. cable percussion boreholes, 11 no. rotary boreholes, 32 no. trial pits, 87no. dynamic probes, 26 no. standard percolation tests, sampling and lab tests.

7.5.71. Potential impacts on land relate to temporary or permanent land take as a consequence of proposed infrastructure.

7.5.72. Temporary land take for construction of abstraction infrastructure is not stated. However, the site planning boundary (Drawing no. P-SL-LOC-001.1) indicates the overall footprint of the development in the area of Lough Skannive and Lough Ierin and land take is not excessive (NB in the CEMP (page 23), it is stated that the site of the freshwater abstraction works site compound is shown in Planning Drawing 2490 LP 001. This is not on file however it is assumed for the purpose of this assessment that the construction site compound will be within the confines of the site boundary shown in drawing No. P-SL-INF-006.7 Construction Water Management System – L. Skannive Abstraction Site).

7.5.73. Permanent land take for the abstraction infrastructure from Lough Skannive and Lough Ierin is of 1740m^2 (mostly 'Peat bog') associated with the footprint of the

pumping stations and access road to PS1. The remaining pipeline works over c.5km will take place within the public road. At Pairc na Mara there will be a loss of 8.26ha of 'Peat bog' and 'Land principally occupied by brownfield land, with areas of natural vegetation'.

7.5.74. The EIAR considers that due to the modest land take and prevalence of similar land type in the area, impacts of construction on land will be temporary imperceptible in the study area and operational effects will be permanent, imperceptible negative in contrast to the do nothing scenario (no change in semi-developed brownfield site/partially greenfield and partially undeveloped/peat bog). No other developments are proposed in the area of the site with no consequent cumulative effects.

7.5.75. Potential impacts on soils arise indirectly from land take and the footprint of the development. The EIAR indicates two distinct areas on the site in respect of soils, the area long the stream bank which has a thick cover of bog/peat and the area further east (towards the shore) which is predominantly exposed rock and little soil (Figure 9.2 EIAR). Volume of soil to be removed to facilitated the development is estimated modest in the context of the wider resource:

- Freshwater abstraction pumps – 50m^3.
- Pipeline construction – 9,000m^3 (most excavated material from ground/existing roadway).
- Pairc na Mara – 23,759m^3.

7.5.76. All excavated peat/soil at Pairc na Mara will be re-used in landscaping and berming and all rock will be used for road bases, raising ground etc. No soil/rock will be moved off site. Impacts on soils from earth works are identified as increased risk of erosion, compaction and therefore runoff and of contamination arising from improper management, handling, storage and accidental spills of fuels, lubricants etc. excavation of hazardous materials (from made up ground) and improper management of invasive species.

7.5.77. Mitigation measures include:

- Re-use of material on site.
- Short sectional works for pipeline construction.

- Surface water management for temporary storage areas.
- Good construction practices (see CEMP).
- Best practice in the management of invasive species (see Invasive Species Management Plan in CEMP).
- Isolated storage of contaminated soils (if found) within the Pairc na Mara site and prompt removal off site by licenced contractors.

7.5.78. With implementation of mitigation measures, residual impacts on soil are predicted to be (a) permanent, imperceptible negative principally due to the small extent of loss ecological function (permanent covering) in the wider context of the resource in the area, and (b) potential temporary slight negative impact, during construction works.

7.5.79. Potential impacts on geology arise from the excavation, handling, storage, processing and transport of earthworks materials. Estimated volume of bedrock excavation during construction is:

- Freshwater abstraction pumps – 100m^3.
- Pipeline construction – 6,900m^3 (primarily in road).
- Pairc na Mara – 23,517m^3.

7.5.80. The EIAR states that whilst much material will be reused within the site (rock), but a significant volume will be removed from the proposed scheme. In response to the request for FI the applicant states that requirement to export rock off-site has been designed out. As the underlying bedrock (granite) is abundant in the area, the portion to be removed/reused is considered to be imperceptible, with no significant impact on bedrock i.e. there will be a permanent imperceptible negative impact on geology.

7.5.81. With regard to quaternary geology (sub-soils), impact of removal is considered to be minimal as the subsoils encountered are abundant in the study area. The risk of contaminated sub-soils is acknowledged (e.g. in made ground) albeit unlikely on the basis of available evidence. Mitigation measures include re-use of sub-soils as fill and for landscaping. Residual impacts are considered to be potential permanent, imperceptible negative impact compared to the do nothing scenario.

7.5.82. No cumulative impacts are predicted due to the absence of significant developments planned or permitted in the area of the site and management of existing Coillte forest operations in a manner which protects soil quality.

7.5.83. **Assessment.** Having regard to my inspection of the appeal site, its make-up and the extent of the proposed development, I am generally satisfied with the conclusions of the report, that significant environmental effects on land and soil are unlikely to arise.

7.5.84. **Conclusion.** Having regard to the foregoing I am satisfied that the subject development will not give rise to direct, indirect or cumulative significant effects on land or soil, subject to the strict implementation of mitigation measures.

Water

7.5.85. Chapter 8 of the EIAR deals with water quality, hydrogeology and hydrology. Figure 8.1.2 summarises the proposed hydrological works, the surface water bodies that may be affected and Irish Water infrastructure in the vicinity of the site.

A. FRESHWATER SUPPLY SCHEME

7.5.86. The proposed development is projected to require a daily untreated lake water supply throughout the year of up to 2,105m^3/day or 2.105 MLD (megalitres/day) plus 0.2MLD of potable drinking water. It is stated that the applicant will endeavour to minimise the lake water demand by process efficiencies, water conservation and by optimising use of treated wastewater where feasible within the Páirc. Fresh lake water will be abstracted from Lough Skannive/Dooletter East River catchment and potable drinking water from the Carna-Kilkieran Water Supply Scheme (connection already on site). Irish Water have indicated that the proposal for a potable water connection at PnM can be facilitated, subject to certain (Appendix 8.10). The proposed freshwater system will include a lake and pump sump water level monitoring system, a metered pump flow monitoring system, a rainfall monitoring system and a PLC controlled active water balance modelling system for Lough Skannive, Lough Ierin and Loughaunore impoundments system to inform and control the operation of the combined Irish Water and Páirc na Mara schemes. Section 8.2.1.1 of the EIAR describes in detail the operation and maintenance of the proposed freshwater supply. It includes:

- Abstraction main 1 and pumping station 1 (Lough Skannive) will supply the Lough Ierin impoundment with freshwater via rising main (Figure 8.2.1). Abstraction main 2 and pumping station 2 (Lough Ierin) will supply freshwater to PnM by rising main (RM2).
- Maximum intake velocity of 0.15m/s, the maximum velocity at which juvenile fish can swim away from the intake screen (Lough Skannive and Lough Ierin). In both cases, intake velocities will not be exceeded until abstraction flows exceed 208m^3/hour (Lough Skannive) and 171m^3/hour (Lough Ierin). The EIAR states that it is anticipated that these abstraction rates will never be exceeded.
- Self-cleaning (air) and backwashing (freshwater) of the intake screen (Lough Skannive, Lough Ierin).
- Following consultation with Irish Water, drawdown restrictions in Lough Ierin and Loughaunore to protect drinking water abstraction from Carna-Kilkieran Water Supply Scheme.
- Increase in the storage capacity of Lough Ierin by 0.4m with the construction of a new outlet control structure at Lough Ierin.
- Two no. scour valves and chambers in the rising main from Lough Skannive and Lough Ierin to Pairc na Mara to clear accumulation of sediment from the rising main, should they build up (Figure 8.2.2). Discharges to go to lakes or larger streams (to be dispersed by overland system) or chambers to be emptied by tankers. Use of scour valves will be limited to commissioning and no more than once a year. Scour discharge volume is c.30m^3 in total, discharge rate is c.50L/s and duration <10 minutes (for between Lough Ierin and Pairc na Mara).
- Freshwater storage reservoirs at PnM will include scours and high level overflow pipes, with infrequent discharges to natural attenuation pond in Pairc na Mara (to drain to Lough na Síog stream).
- Pumping station 1 (PS1, Lough Skannive), pumping station 2 (PS2, Lough Ierin) and the outlet control chamber (OC2) at the outlet from Lough Ierin impoundment will be owned, operated and maintained by the applicant. The

operation of PS2 and OC2 by the applicant will be co-ordinated at all times with Irish Water and a comprehensive operational agreement will be in place between the two authorities in this regard. Minutes of meetings between the applicant and Irish Water in respect of this agreement are set out in Appendix 8.12. In these minutes it is stated that Irish Water are supportive of the project and the abstraction of freshwater, subject to detailed design of infrastructure, operational agreement and abstraction licence to EPA (pending legislation). The minutes (13th May 2020) refer to:

- A sustainable yield from the three lakes (Skannive, Ierin, Loughaunore) of 4.8Ml/day.
- Maximum demand from Pairc na Mara 2.5Ml/day. Current and future requirement for Carna-Kilkieran RWSS, including peak demand during drought conditions, 2.7Ml/day. This would leave 2.1Ml/day for Pairc na Mara.
- Maximum demand for public water scheme (Carna-Kilkieran RWSS) to 2044, 2.9mL/day. Likely to result in deficit from current catchment of Lough Ierin and Loughaunore. Proposed arrangements for abstraction from Lough Skannive would be of benefit to IW. In such circumstances, water available to Pairc na Mara would be 1.9Ml/day (4.8-2.9=1.9).

- The operation of the pumping station at Lough Skannive will be subject to stringent conditions to ensure that there is no significant impact on the lake and river/stream fisheries, sensitive habitats and the overall WFD ecological rating system for the system and the abstraction of water by Irish Water for the production of potable water for Carna-Kilkieran RWSS.

7.5.87. In order to determine the potential impacts of the freshwater supply scheme the applicant provides:

- Hydrological Water Balance Model for the Lough Skannive/Dooletter East River system and Carna-Kilkieran WWS impoundments to determine baseline hydrological conditions and to simulate potential hydrological impacts associated with the development and to design out impacts.

- An assessment of the hydrological impact of the development on waterbodies in accordance with the EPAs proposed abstraction assessments (currently being developed under the requirements of the WFD) (see Appendix 8.1 EIAR). EPA recommendations include that the applicant's assessment of freshwater supply scheme hydrological impacts be assessed in accordance with the UKTAG guidance for assessment of abstraction effects. (UK Technical Advisory Group 'UK Environmental Standard and Conditions Final Report, 2008 and amended 2014). Waterbody status of lakes and rivers affected by the development are set out in table A8.1.1, Appendix 8.1, as confirmed by the EPA.

  Table 8.2.1, EIAR, indicates Irish Water's summary demand for water to supply the Carna Kilkieran RWSS in 2019 (current) and future (2044). When the potable water supply for PnM and additional allowance required by Irish Water to produce required water levels for the RWSS, the Normal Year Annual Average(NYAA) daily abstraction rate for Irish Water in 2044 is 2.622-2.695MLD, leaving an average daily volume of **2.105-2.178MLD available to supply Páirc na Mara**. Irish Water's maximum Dry Year Critical Period daily abstraction would be 3.358-3.453MLD, leaving an **average daily volume of 1.348-1.442MLD, available to supply Páirc na Mara** during short duration critical dry year events. It is stated that it is an objective of the applicant to put in place a strategy to reduce the freshwater demand at the Pairc, with potential to reduce this to 1.35MLD during infrequent short duration critical periods (e.g. with process efficiencies and water usage conservation practices).

- Assessment of the potential impact on fisheries compensatory flows in accordance with IFI guidelines. It is stated in the EIAR that fish passage between Lough Ierin and Lough Skannive is impeded due to absence of discharge flows from Lough Ierin impoundment, the steep gradient between the lakes and length of interconnective watercourse. IFI indicated that the subject development should not result in further deterioration of the existing scenario and that, preferably, fish compensatory flows would be available in the stream throughout the year. Estimated fisheries compensatory flow rates

for Dooletter East River, Lough Ierin outlet and Loughaunore outlet are shown in Appendix 8.2.

- An assessment of lake water quality in the waterbodies in the study area (water chemistry – Appendix 7D), with a view to determining the likely effect of Lough Skannive lake water on Lough Ierin.

7.5.88. Potential impacts are identified for do nothing, construction and operation. In summary these are:

- Do nothing. No new freshwater abstraction works, and no non-Irish Water increase in treated water abstracted from Lough Skannive system. In the absence of compensatory flows, the fisheries flows in the outlet channel from Lough Ierin will continue to reduce as demand in Carna-Kilkieran WSS increases.
- Construction. Construction of PnM water supply scheme could have a temporary impact on water quality, flows, levels etc. in the lakes, impoundments and watercourses along its route.
- Operation. It is stated in the EIAR that the proposed development has been developed to design out potential significant hydrological impacts where feasible and otherwise to include mitigations to reduce impacts sufficiently. A preliminary screening of potential hydrological impacts in the absence of mitigation are:
    - Direct year round abstraction from Lough Skannive for combined IW and PnM demand, up to 2.5MLD for PnM - Drawdown levels significantly reduce flows in Dooletter East River, with impact on the WFD ‘Good status’ of the Lough Skannive and River, impact on fisheries and other sensitive aquatic habitats.
    - Direct year round abstraction from Lough Ierin/Loughaunore up to 2.5MLD combined demand PnM/IW – Drawdown impoundment to unsustainable levels and significant increase no flow in outlet channel. Impact on fisheries. Impact on public water supply scheme.
    - Direct year round abstraction from Lough Ierin/ Loughaunore for combined IW and PnM demand up to 2.5MLD with supplementary

flows from Lough Skannive when hydrological conditions allow - Drawdown impoundment to levels that could increase duration of no flow in outlet channels and could impact on public water supply scheme. Impact on WFD status of Lough Skannive and Dooletter East river.

7.5.89. In order to assess the likely effects of the development during operation, the EIAR (a) compares the abstraction requirement from Lough Skannive to the average inflow rate (as per the Article 5 WFD Risk Assessment and ERDB guidelines), and (b) includes the proposed development in the model of the baseline hydrological water balance (along with projected IW demand) that was developed for the period 2013-2018. The model includes specific abstraction rates, outlet flow controls and a pumping regime that is controlled by water levels in Lough Skannive/outlet flow to Dooletter East River and water levels in Lough Ierin (page 8-29).

7.5.90. The Stage 1 WFD Assessment concludes that the proposed extraction from Lough Skannive (PnM and IW), relative to inflows to the Lough, would be Category 2a-Probably not at Significant Risk of ecological impact (Table 8.2.7 and Appendix 8.1).

7.5.91. The water balance modelling exercise (undertaken in accordance with EPAs recommended UKTAG Guidance for the assessment of impact of freshwater abstractions[5]) confirmed:

- An uninterrupted 4.8Mld abstraction rate (total abstraction envelope) was achievable from the combined catchment areas of the Irish Water Carna - Kilkieran RWSS (Lough Ierin and Loughaunore) and proposed Pairc na Mara scheme (new Lough Skannive abstraction) throughout the simulation period 2013 – 2018, which was inclusive of the two most significant droughts in the catchment since 1970 (occurring in 2014 and 2018).
- The operation of PS1 (Lough Skannive to Lough Ierin) and PS2 (Lough Ierin to PnM) which would be subject to stringent controls to mitigate significant hydrological impacts, will decrease water levels in Lough Skannive and Lough Sheedagh on average by 2.9cm relative to the baseline scenario, with average monthly water level decreases ranging from 1.4cm in June to 6.1cm

[5] UK Technical Advisory Group 'UK Environmental Standards and Conditions Final Report' 2008 and amended 2014.

in November. Short term temporary decreases in water level in excess of these depths are projected to occur. The projected average decrease in water levels at Lough Skannive below 95%ile levels is <1cm, between 95%ile and 70%ile water levels is <2cm and thereafter rise to 5.1cm at 40%ile water levels before decreasing to <2cm for the 1%ile.

- Abstraction via PS1 and PS2 will result in a decrease in discharge flow rates from Lough Skannive to Dooletter East River. Projected changes do not exceed UKTAG guidance limits for Type D1 waters. Projected annual reduction in discharge relative to mean baseline discharge is c.10%, the limit for lake abstractions in the WFD 1st Cycle guidelines and would be classed as Category 2a – Probably not at significant risk.
- Lake surface water area at Lough Skannive would decrease by <3% having regard to maximum average decrease in water level by 6cm in November. During September to November some years, lake surface area reduction may exceed 5%, but duration of exceedances would be short term. Overall average %age area reduction between baseline and proposed scenario is estimated to be 2%. Proposed abstractions, based on average monthly conditions would comply with UKTAG recommendations for abstractions from lakes of Good status.
- Development will increase drawdown of storage volumes at Lough Ierin and Loughaunore impoundments throughout the year. Impoundments would refill during late autumn/winter period with catchment runoff and supplementary flows from Lough Skannive. Projected drawdown during simulation period does not exceed design drawdown levels for impoundments.
- PS1 is projected to supplement between 50% and 67.5% of the water abstracted for PnM scheme (based on 2.105MLD pumped to PnM) and therefore between 32.5% and 50% of the PnM supply would be sourced directly from Lough Ierin catchment.
- No discharge from Lough Ierin to outlet channel would increase from 193 days/year (baseline) to 288 days/year (proposed scenario) i.e. by 95 days or 53%. The development will therefore exacerbate impact on fish passage and aquatic habitats at outlet channel.

- Abstraction channels could draw fish into pumps.
- Water quality in Lough Ierin and Lough Skannive is similar, in terms of pH. Therefore no impacts on water quality will arise as a consequence of water chemistry. However, impacts could arise as a result of disturbance of lake sediments with inflows to Lough Ierin and transfer of potentially polluted waters from Lough Skannive to Lough Ierin (risk of polluted waters is considered to be low due to isolated, unpopulated and undeveloped nature of catchment). Potential impacts on water quality may also arise from pipeline scour outflows. However, having regard to modest volume of pipeline scour flows that would discharge to Loughaunore system impacts on water quality are considered to be minimal (discharge from scour valves to discharge to adjacent hillside drain, which ultimately discharges to Loughaunore).

7.5.92. Mitigation measures are set out in the section 8.2.6 of the report.

- Stringent operational controls at the pumping stations and other proposed works to prevent hydrological impacts of abstractions. These include:
    - Telemetry linked monitoring system of water level gauging, flow gauging, rainfall gauging, routine updating of water balance model, compliance with WFD and UKTAG guidelines and IFI guidelines and shared information to all stakeholders.
    - Abstraction subject to stringent controls and directly linked to baseline lake levels for both PS1 and PS2.
    - Hydrocarbon monitors at the Lough Skannive and Lough Ierin pump sumps to alert applicant of any potential contaminants in source waters. If detected abstraction pumps to be turned off until source identified.
- Fisheries compensatory flows and improved fish passes at Lough Ierin outlet channel, to be designed in accordance with IFI requirements (see agreement expressed by IFI in meeting with applicant, Appendix 8.13).
- Abstraction works to limit fish ingress and drawing fish into pump sumps (approach velocities <0.15m/sec).

- Construction state mitigation measures to prevent significant hydrological impact on study area waterbodies. Detailed measures are summarised in section 8.2.6.4 of the EIAR on and set out in section 9.3 of the CEMP (appendix 3.2 to Chapter 3). These include detailed measures for all works potentially impacting on freshwater.

7.5.93. Potential residual and cumulative effects are sets out in section 8.2.7. In summary impacts are:

- All water bodies, construction – With mitigation temporary, short term negative very localised hydrological effect on water quality with imperceptible residual impact.
- Loughaunore, operation.
    - Drawdown in water levels at Loughaunore – Maximum drawdown predicted to be 2m, less than historic levels. Therefore, temporary, slight negative hydrological effect on the impoundment most years.
    - Loughaunore Outlet channel – Increase in duration of no discharge from Loughaunore to Lough Ierin for later summer period. Therefore temporary, slight negative effect on outlet channel flows most years.
- Lough Ierin and outlet channel, operation. Maximum increase in drawdown of 3.5m during late summer period, with a high impact on water levels. Water levels will rise with catchment flows and pumping from Lough Skannive in winter. Overall, temporary (annual average 6 months period) moderate to significant negative hydrological effect on impoundment. With mitigation measures to proposed outlet channel, long term significant positive hydrological effect on outlet channel throughout the year.
- Lough Skannive and Lough Sheedagh, operation. Predicted drawdown of Lough Skannive and hydraulically connected Lough Sheedagh will have a long term, insignificant negative hydrological residual effect on the lakes.
- Dooletter East River, operation. Abstraction works designed with stringent controls to ensure that proposed changes in discharge from Lough Skannive to Dooletter River East will not exceed UKTAG guidance limits for Type D1

waters throughout the year. Long term insignificant negative hydrological residual effect on flows in Dooletter East River.

B. LOUGH NA SÍOG STREAM CULVERT WORKS

7.5.94. The EIAR assesses the likely effect of the flood alleviation works at PnM by upgrading a section of the Lough na Síog stream channel and two existing culverts (nos. 7 and 8) within the development boundary. It refers to the Flood Risk Assessment Report (Appendix 8.7, EIAR) discussed in the Planning Section of this report. The Assessment concludes that under current arrangements overland flows occur upstream of culvert no. 7, culvert no. 8 is the main control of flood levels in the flood plain (see Figure 8.3.1) and is at risk of blockage, local road to the east of the site (vicinity of culvert no. 8) is at risk of flooding and the site itself is at risk of flooding from 1 in 100 and 1 in 1000 year events.

7.5.95. In order to manage flood risk at the PnM site and facilitate an optimum development site, whilst not impacting on upstream or downstream flooding, the applicant proposes channel improvement works between the western site boundary and culvert no. 7 (increasing size of channel), replacing culvert no. 7 and 8 (increased capacity), provision of a flow control structure (weir wall with rectangular notch) upstream of culvert no. 8 to maintain current Qbar flood levels (to mitigate risk of downstream flooding), retention of flood plain between culvert no. 7 and 8 and interception of flow paths from lands upstream of the development via open drain along site boundary and diversion to Lough na Síog stream. Flood levels upstream of culvert no. 7 will decrease as a consequence of the flood alleviation works (Appendix 8.8).

7.5.96. Potential impacts of the PnM development include:

- Do nothing. In the absence of flood alleviation works at the site and management of overland flows in adjacent streams, the existing local road downstream of the site would be at high risk of overtopping flood events and much of the site would be unsuitable for development due to flood risk. Culvert no. 7 would remain as an impediment to fish passage upstream of site.
- Construction. Significant impacts on water quality during construction.

- Operation. With the proposed flood alleviation works, risk of upstream and downstream flooding is reduced, and development occurs above 1 in 1000 year flood level (8.25mOD upstream of culvert no. 7 and 8.0mOD between culvert no. 7 and no. 8) with free board. Risk of overtopping of local access road downstream of the site following culvert upgrade works is low (no increase in discharge rates and therefore no flood risk increase downstream of development due to flow control structure). Construction of the channel could lead to poor fish passage through the site, scouring and erosion of channel beds and removal of wildlife corridor through the site.

7.5.97. Mitigation measures are set out in section 8.3.5. These include:

- Provision of topsoiled and grassed seeded slopes (but largely kept clear of heavy overgrowth).
- Regraded channel beds to be reinstated to match existing and allow for some stream vegetation.
- Low flow channels, with appropriately sized cobbles, culverts and the upgraded section of the channel to benefit fish passage potential through the site.
- Channel and culvert works to TII 'Guidelines for the Crossing of Watercourse during the Construction of National Road Schemes'.
- Detailed measures to protect water quality during construction works, including provision of silt fences, water management system, temporary diversion channels etc.

7.5.98. Residual effects on Lough na Síog stream are considered to be temporary, slight negative localised hydrological effect on water quality, fish passage and flood risk during construction and long term, moderate positive hydrological effects during operation.

C. SURFACE AND WASTE WATER DRAINAGE

7.5.99. Surface water from the subject development will be largely directed via the surface water drainage system into Lough na Síog stream (some of the proposed facilities will have internal surface water drainage systems for their process areas and these will be directed to the PnM process waste water treatment plant). Minor

watercourses which cross the site will be directed to the stream or the sea. A WWTP will be constructed on site with outfall to Kilkieran Bay. The existing domestic WWTP will be upgraded, and treated effluent will be pumped to the marine outfall pipe.

7.5.100. Potential effects on waterbodies arise from risks to water quality and hydro-morphology from contamination with suspended solids, hydrocarbons, other pollutants, largely during construction, and process wastewater and increased rates of surface water runoff during operation.

7.5.101. Mitigation measures for construction works are set out in the CEMP. Potential operational impacts from the drainage system are mitigated by design measures set out in Table 8.4.2 (page 8-65). Measures include attenuation of discharge from existing flood plain, outfalls to stream and floodplain via oil and sediment interceptor and discharge apron (to prevent erosion and dissipate flows), outfall to sea to exposed granite, provision of drainage aprons from process areas with runoff directed to process WWTP, treated effluent from domestic and process WWTP to required standard.

7.5.102. With implementation of mitigation measures residual and cumulative impacts are considered to be temporary and not significant (construction) and permanent, not significant (operation) for Lough na Síog stream and Kilkieran Bay.

D. GROUNDWATER

7.5.103. The appeal site is underlain with granite. It lies in the Spiddal Groundwater body which is classified as a Poor aquifer, generally unproductive except in local zones. Depth to bedrock is shallow/none and classification is extreme. Construction of the proposed development, freshwater supply scheme and PnM development site, will comprise excavation works and interaction with groundwater.

7.5.104. Potential impacts are identified as:

- Do nothing. Groundwater regime will remain as is.
- Construction. Construction works likely to intercept groundwater at interface between overburden and bedrock (interception in bedrock unlikely, other than at extremely fractured sections which is considered unlikely). Degree of groundwater interception will vary by location e.g. with more likely at location

of abstraction pumping stations. Where required excavation dewatering to be carried out. Mitigation measures are detailed in the CEMP. Given localised effect and lack of groundwater sensitive habitats at and adjacent to development sites, groundwater impacts are considered to be very localised, temporary and moderate to negligible.

- Operation. Pumping stations are considered to have no impact on groundwater flows once construction complete and excavation backfilled (temporary not significant to imperceptible impact). Linear nature of rising main pipeline identified as a potential risk to groundwater regime e.g. acting as a drainage conduit for groundwater flows with potential for impact on local ground water regimes. Existing groundwater regime will be permanently changed due to excavation and fill works, surface works and groundwater drainage works. PnM site surface water will be intercepted and directed back to receiving waters. Impact will be localised to site. Leakage from process water pipelines have potential to contaminate groundwater and to pollute receiving waters. All gravity flow pipes to be pressure tested for leaks during construction.

7.5.105. Mitigation measures are set out in section 8.5.5 and include:

- Installation of puddle clay stanking at strategic locations along pipeline route to provide impermeable barrier across pipeline trench.
- Whilst risk of groundwater pollution is low, EIAR proposes provision of 2 no. groundwater monitoring wells/standpipes at the downstream (eastern) extent of the PnM site adjacent to the floodplain to allow sampling to occur and demonstrate no pollution.

7.5.106. Subject to mitigation measures, overall impact on groundwater of PnM site and pipeline is predicted to be permanent, localised and not significant.

7.5.107. **Observations**. Parties to the appeal raise concerns regarding treatment of unassigned waters under the Water Framework Directive, impact of the development on Carna-Kilkieran Regional Water Supply Scheme, absence of operational agreement with Irish Water in planning application (risk of altering abstraction details), commercial pressure to safeguard PnM operation, no assessment of

drought conditions and effects on fish stocks in facility and the risk that the freshwater supply will be used off shore salmon farms to treat diseased fish.

7.5.108. The planning authority's final Planning Report sets out their arguments in respect of impacts on freshwater abstraction. These include concerns in respect of impact of the development on public water supplies (applicant has not considered worst case scenario figures in calculations), adequacy of detailed specifications for construction management and mitigation measures to prevent impacts on water quality and contingency plans at the PnM site in the event of insufficient supply.

7.5.109. The appellant refers to each of these points in the appeal submission and cross references points made to the revised EIAR. I have had regard to the PA report and the applicant's submission in my assessment below.

7.5.110. **Assessment.**

7.5.111. Unassigned waters. In chapter 8 of the EIAR it is stated that all surface waterbodies associated with the development are assessed against an actual or deemed WFD classification, in consultation with the EPA (see Appendix 8.1, EIAR). I consider, therefore, that this matter has been adequately addressed.

7.5.112. Use of freshwater. The planning application sets out the nature of the proposed development and it is clear from this that water will be used on site i.e. there is no permission sought for its use off site. Further, minutes of the meeting between UnG and IFI indicate that freshwater supply would not be used for off shore fish washing (appendix 8.13).

7.5.113. Impact on public water supply. In their submission on the planning application Irish Water raise concerns regarding the effect of the development on their ability to meet future demand for public water supply in the Carna-Kilkieran Regional Water Supply Scheme. It is stated that the projected demand from the Scheme in 2044 will be 2.939MLD representing a dry year critical peak requirement. Further, this requirement will result in a deficit from the current waterbodies supplying the Scheme of 464m^3/day (possibly more). If permission is granted for the development, they request amongst other things that the public water supply is maintained at all times and prioritised over PnM, including reduction or temporary cessation of raw water to PnM.

7.5.114. The EIAR refers to the likely demand for water in the public supply in 2044:

- Normal year annual average (NYAA) 2,250MLD, and **2.622-2.695MLD** including 200m^3/day potable water to PnM and 7-10% IW residual allowance.
- Dry year critical period (DYCP), 2,939MLD, and **3.358-3.453MLD** including 200m^3/day potable water to PnM and 7-10% IW residual allowance.

7.5.115. PnM demand for water is stated to be **2.5MLD** (including 10% headroom allowance). Projected total NYAA demand for water to 2044, public water supply and PnM, would be **5.195MLD** and DYCP **5.953MLD**. (NB PnM demand has been reduced in the EIAR from 2.5MLD to 2.105MLD).

7.5.116. The Hydrological Water Balance Model indicates that **4.8MLD** is available from the catchment (effects on the catchment are discussed under Ecology and in the Appropriate Assessment sections of this report). Water availability to PnM may range therefore from **2.105MLD (NYAA) to 1.347MLD (DYCP)** from the 4.8MLD available. (NB I note that the water balance model includes reference to works at Loughaunore. In response to the FI request the applicant states that these works are not included and are an error in the NIS. However, it is unclear if the conclusions of the EIAR are predicated on increased storage capacity in this Lough).

7.5.117. The applicant acknowledges that the catchment cannot supply this volume of water without significant effect on waterbodies. Consequently, it is stated that the abstraction will be strictly controlled to not exceed 4.8MLD and that public water supply will be prioritised, with a comprehensive operational agreement with Irish Water to this effect. There is operational agreement on file. However, I note that Irish Water have indicated that they are supportive of the project and that the arrangements proposed by the applicant are acceptable (see email response from Irish Water dated 3rd August 2021). Any technical agreement between the parties would be required to be consistent with any planning permission granted.

7.5.118. The applicant sets out details on pumping controls in section 8.2.5.2 and 8.2.6.1 of the EIAR. These include controlling the abstraction rate from Lough Skannive based on prevailing hydrological conditions at the lake and its outlet channel (Dooletter East River). They acknowledge in the appeal (page 17) that it is a complex control regime that is proposed to control water levels in the lake and that

there may be times when volumes available will reduce. Mechanisms to minimise potential impacts of such events include minimising fresh water demand by process efficiencies, incorporating water conservation measures into the park, optimising the use of treated waste water and use of seawater in the RAS grow out facility and RAS hatchery with the potential to reduce overall site demand to c.1.2MLD from the identified 2.105MLD. In the appeal submission the applicant refers to reducing demand at the PnM site for short periods to 1.9MLD to accommodate periods of high demand at the Carna-Kilkieran WSS.

7.5.119. Whilst I am mindful that:

- A technical solution to the management of flows from waterbodies, albeit complex, is possible,
- The overall objectives of the proposed development as a marine innovation park include the active pursuit of sustainable models of marine development,
- The development is located in traditional marine environment and is likely to bring economic and social benefits to the area,

I am not confident that development has been designed such that it's requirement for freshwater can be readily accommodated within the catchment. There is a risk that it will introduce a significant pressure on the affected water bodies and/or frustrate the development of the PnM site. Further, and more importantly, the applicant's modelling of the catchment and existing and future scenarios, does not have regard to the effects of climate change which may impose more restrictions on available water supply, with more consequences for both the public water supply scheme and the operation of PnM site.

7.5.120. Specifications in CEMP (including groundwater management). The applicant's CEMP is set out in Appendix 3.2 of the EIAR. Appendix 3 of the CEMP provide details on the proposed Freshwater Management System measures for the freshwater supply scheme and Appendix 4 the Water Quality Management System for PnM site. These includes details on the management of groundwater intercepted during construction works informed by site investigations, with extrapolated flows assuming a worst case scenario and surface water/groundwater management systems designed to handle very large flows. Measures included are standard good practice and in respect of freshwater supply and PnM site are detailed and site

specific (and exclude sheet piling). I am satisfied that subject to implementation of these measures, no significant adverse effects on water quality as a consequence of construction works are likely to arise.

7.5.121. Water quality monitoring system Lough Skannive to Lough Ierin. The applicant proposes chemical monitoring of water pumped from Lough Skannive to Lough Ierin to include parameters such as turbidity, hydrocarbon and ammonia, with the monitors linked to an automatic shut-down of pumps transferring water from the lake to the impoundment if pollution is detected. In principle, I consider this approach to be appropriate and sufficient to prevent pollution of impounded water. I note that Irish Water have not objected to this aspect of the development.

7.5.122. Efficacy of water treatment in on site WWTPs.

7.5.123. The proposed development includes upgrading of the existing domestic WWTP and provision of a process wastewater WWTP. Technology employed for both plants provides a high level of treatment such that domestic and process wastewater pollutants are low, with the high quality effluent having no predicted adverse effects on water quality in Kilkieran Bay (3.7.1.9 and 3.7.1.10 and Appendix 7K, EIAR). The refurbished domestic WWTP includes secondary treatment by rotating biological contactor (RBC) and tertiary treatment by UV treatment unit (sterilizing microorganisms). The process WWTP will use Membrane Bio-reactor (MBR) for secondary treatment, which produces substantially clarified and disinfected effluent, and alum or ferric sulphate dosing for tertiary treatment to control phosphorus concentrations, if required. Disinfection with UV dosing will also be provided to minimise pathogen discharge (domestic wastewater will be treated separately so risk of pathogenic micro-organisms is low). Sludge that is generated by the WWTP will be directed to an anaerobic digester to recover energy (biogas). Resultant reduced volumes of sludge will be transported off site. (Biogas to be piped to energy centre to offset use of LPG). The wastewater treatment system includes a treated effluent sump for sampling to monitor effluent quality before disposal through the marine outfall).

7.5.124. The EPA's monitoring data for water quality in Kilkieran Bay for the period 2013 to 0218 indicates 'Good status', with 'not at risk' status of achieving water quality objectives under the Water Framework Directive (WFD) i.e. 'Good status' by

2027. Good status is defined by reference to ecological status and chemical status. I note that the 'Ecological Status or Potential' of Kilkieran Bay has declined, with monitoring for the period 2007 to 2015 indicating 'High' ecological status or potential.

7.5.125. As competent authority it is incumbent on the Board to ensure that the development does not give rise to a deterioration in water quality in Kilkieran Bay.

7.5.126. Appendix 7K, EIAR, provides a hydrodynamic and transport dispersion modelling study to assess the water quality impact of the proposed seawater outfall and seawater intake in Kilkieran Bay. Water quality parameters that are assessed are E. coli, BOD, dissolved inorganic nitrogen, molybdate reactive phosphorus (MRP). (NB the EIAR states that concludes that the modelling exercise shows no adverse effects on ammonium levels, but no results of this exercise are presented. I note that the Shellfish Regulations do not set out a standard for ammonia in coastal waters). Combined inputs from the domestic and process WWTP, for these parameters, are shown in Table 7.23 of the EIAR (Appendix 7K).

7.5.127. Water quality simulation results are shown in section 7.17.4. E.coli is predicted to be a maximum of 140no./100ml at the outfall site (surface layer concentrations), rapidly dispersing to much lower levels.

7.5.128. Schedule 4 of the European Communities (Quality of Shellfish Waters) Regulations (2006) as amended, refers to a standard of equal to or less than 300no./100ml faecal coliforms in the shellfish flesh and intervalvular liquid. The EIAR refers to standards for Bathing Waters with excellent quality at E. coli <cfu/100ml at 95% and sufficient quality at <500 cfu/100ml at 90%. It is not clear if the colony forming unit (cfu) equates directly to the no. of E.coli per 100ml. Notwithstanding this, from the information available on file, it would appear that dilution and reduction in concentration in receiving waters is good, with effects largely confined to the immediate area of the outfall site. Having regard to the location of the outfall pipe in designated Shellfish waters and the need to abstract high quality seawater from PnM the EIAR recommends additional disinfection of domestic wastewater to further reduce E. coli levels.

7.5.129. For BOD dispersion modelling predicts no exceedances of the <=3.0mg/l at 95% standard for BOD set out in the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (as amended) for BOD in high status

transitional waters (no standards set for coastal waters). Similarly, total nitrogen concentrations are within standards for high status coastal waters (maximum concentration 0.1774mg/l N at outfall bottom layer concentration, medium 0.579mg/l N, standard = 0.17mg/l N at mean concentrations.

7.5.130. The Surface Water Regulations provide no standard for MRP in coastal waters. It is stated in the EIAR this as MRP is not considered a limiting nutrient in coastal waters in respect of enrichment. Notwithstanding this the EIAR estimates that MRP Surface Water Regulations levels for High Status Transitional waters will be largely achieved, with a slight exceedance immediate to the outfall itself (see Table 7.28).

7.5.131. The proposed development is situated in an environmentally sensitive site with abstraction of seawater from, and discharge of treated wastewater to, the Bay. It is evident from the information presented that a high level of treatment of effluent is proposed to comply with the Surface Water Regulations and to enable abstraction of high quality seawater, as befitting of a marine innovation centre.

7.5.132. If the Board decide to grant permission for the proposed development the applicant will be required to apply for the appropriate waste discharge licences. However, for the purpose of this appeal I am satisfied that the applicant has demonstrated that in principle that effluent discharge will not adversely affect water quality directly or indirectly in Kilkieran Bay.

7.5.133. *Cumulative impacts on water quality in Kilkieran Bay.*

7.5.134. This is assessed in the Appropriate Assessment section of this report.

7.5.135. *Air*

7.5.136. Impacts on air quality are addressed in Chapter 10 of the EIAR. Chapter 12 of the EIAR deals with noise and vibration. Likely effects of the development on local residents by way of construction noise and dust are considered in the Planning Assessment of this report.

7.5.137. The air quality assessment considers the potential for significant effects on air quality having regard to baseline conditions, predicted emissions and environmental assessment criteria (which include reference to best practice guidelines and EU/national emission limits). The appeal site lies in a rural area with background air

quality of Zone D, with very low concentrations of air pollutants well below air quality limit values. Nearest sensitive residential receiver locations are shown in Figure 10.3 and nearest ecologically designated sites in Table 10.17 and in Figure 10.4.

7.5.138. Predicted construction air quality impacts of dust soiling, impacts on human health (particulate matter) and ecological sites (dust deposition), arising from earthworks, construction and trackout range from low to medium (Table 10.30) having regard to nature and extent of works and proximity of receptors. With the application of standard mitigation measures (section 10.5), including a Dust Management Plan, significance of impacts reduces to negligible.

7.5.139. During operation:

- Predicted ground level NO_2 concentrations give rise to a 'moderate' change in air pollution concentrations due to Process Contributions from stack emissions for residential receptors. However, concentrations are well below emission limits (Table 10.18). Predicted emissions of particulates will be 'negligible' from stack emissions for residential receptors, based on predicted emission concentration compared to EU limit/target value and percentage change in air quality (also Table 10.18).
- Predicted odour concentrations, at nearest receptors, from the Seaweed Added Value plant and wastewater treatment plan are well below odour target values and percentage change in guideline limit value (Table 10.19). No adverse effects of odour from the RAS facilities are not predicted, due to detailed process control measures and the development of a circular business marine park where the shellfish facility and aquaponics facility can take the nutrient rich discharge water from the RAS facility (with subsequent discharge to the on-site waste water treatment plant).
- The limit value for oxides of nitrogen (NO_x) for the protection of ecosystems is 30µg/m^3 per annum (Table 10.1). Further, the EIAR refers to TII Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes which recommend that '*Where the scheme is expected to cause an increase in concentrations of more than 2 µg/m3 and the predicted concentrations (including the background) are close to (within*

10% of), or exceed the standard, then the sensitivity of the habitat to NOx should be assessed by the project Ecologist'.

Annual mean concentrations of NO_x at designated sites within 15km of the appeal site are shown in Table 10.20 (cumulative values) alongside percentage of the limit value. It is evident that in all instances the annual mean concentration is well below the limit value and percentage values are all less than 10% of the limit value of 30µg/m^3 per annum.

For Kilkieran Bay and Islands SAC an increase in annual mean NOx concentration of 2.66µg is predicted and more detailed analysis is carried out for ammonia and nitrogen sensitive habitats within the SAC and for other sensitive habitats in more distance European sites (Table 10.21 and 10.22). Predicted nitrogen load is significantly below nitrogen deposition critical load for the affected habitat Further. The EIAR therefore concludes that the development will not have a significant impact on nitrogen deposition rates at nearby designated sites or sensitive habitats.

- No impacts on air quality are predicted during operation due to volume of traffic and thresholds for effects on air quality (section 10.4.5).

7.5.140. **Submissions.** In their decision to refuse permission the PA refer to the insufficient information submitted in respect of impacts on population and human health and air in order for them to make a determination in respect of environmental effects and concerns regarding construction noise and dust.

7.5.141. **Assessment.** Having regard to the information on file and the detailed modelling exercise carried out by the applicant and the absence of concerns raised by parties in respect of air pollution, I am satisfied that the proposed development will not give rise to significant adverse effects on air quality to affect residents in the area or sensitive ecological sites. Impacts of construction noise and dust (and operational noise levels) have been addressed in the Planning Assessment of this report.

7.5.142. *Climate*

7.5.143. Annex IV of the EIA Directive requires an assessment of the factors likely to be significantly affected by a project. These include climate, '*for example,*

greenhouse gas emissions, impacts relevant to adaption'. The Directive also requires an assessment of the vulnerability of the project to climate change.

7.5.144. Whilst some topics within the EIAR refer to climate change e.g. flooding and the Interactions section of the report indicates that it has been addressed in the Chapter on 'Air', the matter of climate has not been expressly considered. In particular, the modelling exercise for water abstraction has not considered this matter. I consider this to be a significant omission.

7.5.145. **Conclusion in respect of land, soil, water and climate.** Having regard to the foregoing, I am not satisfied regarding the absence of significant effects on water or that the applicant has adequately addressed the matter of climate. Of note, I have concerns regarding (a) the absence of the effects of climate change on the abstraction of water from Lough Skannive and (b) whether the water balance model is predicated on works to Loughaunore which are not included in the planning application. Consequently, I am not satisfied that the applicant has demonstrated that Lough Skannive has capacity to supply PnM and the future requirements of the regional water supply scheme.

7.5.146. ***Material assets, cultural heritage and the landscape***

Material Assets

Traffic

7.5.147. Chapter 11 of the EIAR deals with traffic and Chapter 14 with Material Assets. It provides an assessment of the likely effect of the development on the local highway network. The methodology follows guidance provided by TII (Traffic and Transport Assessment Guidelines, TII, May 2014) and includes consideration of provision for sustainable modes of travel. Existing traffic flows on the R340 at the entrance to the site were surveyed on Tuesday 25th February 2020. Two way peak hour flows occurred between 8.30am and 9.30am and between 5.45pm and 6.45pm and were found to be low during both periods (104 PCUs and 86 PCUs am and pm peaks respectively) (section 11.3.2.1, EIAR). Flows were factored by 1.7 to reflect likely seasonal peak flows in August (having regard to TII traffic data for the N59) and projected traffic flows for 2023 (year of opening) and 2038, based on TII medium growth scenarios.

7.5.148. Trip generation rates for construction and operation are estimated having regard to Indicative Construction Schedule, predicted HGV movements (section 3.9.5, Chapter 3), estimated of construction staff (section 11.4.1.1) and a detailed breakdown of the various industrial units (section 11.18.1 – Appendix 11G). Estimates of construction traffic include an element of car sharing and travel by minibus. Estimates of operational traffic assume a worst case scenario where staff travel by car alone.

7.5.149. Estimates of construction traffic for phase 1 (32 months) are 37 HGVs travelling to and from the site each day, with 17 travelling into and out of the site in peak hours and 68 car/minibus trips to the site during AM peak and PM peak. Construction phase 2 flows are smaller. For operation, 137 cars in and 54 cars out are predicted for the AM peak hour and 0 in and 83 out for the PM peak. 150 HGV movements per week will be generated by the operational development, equating to 21 trips per day for a 7 day week, with 4 of these movements occurring in AM and PM peak hours. Total resultant peak hour traffic is shown in Table 11.9 in passenger car equivalent units (PCUs). Traffic volumes are predicted to be highest during operation i.e. with 211 PCUs and 103 PCUs forecast for the AM and PM peak hours respectively. These flows are used in the EIAR in the capacity assessment with staff movements following existing patterns and HGV/service vehicles all turning to the east.

7.5.150. The EIAR refers to the existing arrangement where local road L-52452 joins the R340 and the internal access road serving PnM. The report acknowledges that the arrangement could lead to possible conflicts in traffic movements. It is proposed that the existing informal arm of the L-52452 to the R340 be closed, with traffic using the local road, doing so via the internal PnM access road. (This matter is discussed above in the Planning Assessment section of this report).

7.5.151. Proposed parking, as per the requirements of the CDP is 1,200 spaces based on 1 per 33m^2 of gross floor area. It is stated that this number cannot be provided and would be in excess of actual demand generated on site. The applicant proposes 220 spaces to accommodate the maximum no. of staff on site at any time (137 plus visitors).

7.5.152. The EIAR predicts substantial percentage increases on link flows (junction to site), but relatively low volumes of traffic for a priority junction of this type (Table 11.11 and 11.12). A detailed capacity assessment of the R340/PnM access junction is carried out following TII Guidelines (Geometric Design of Junctions DN-GEI-03060), for existing scenario, PnM development year of opening and 2038. It indicates that the junction will operate well within capacity in and up to 2038 (maximum RFCs well below 85% capacity). Capacity tests are repeated on the assumption that all service vehicles (HGVs) will travel to and from Kilkieran (see Appendix 11i). Results again indicate that the junction will operate will within capacity in and up to 2038. Overall it is concluded that the traffic effects of the development on PnM on the surrounding road network will be negative, but slight in the longer term. The EIAR recommends 20 cycle bays, changing and shower facilities to encourage travel to the site by bike.

7.5.153. A Stage 1/2 Road Safety Audit is included in Appendix 11H. Six items identified in the report are addressed, including extinguishment of the existing informal entranceway from the R340 to local road L-52452.

7.5.154. Mitigation measures (section 11.9) include appropriate junction markings and signage, continuous footpaths within the site with pedestrian crossing facilities, relocation of the children's playground to the north side of the site (to avoid crossing internal access road) and a further Road Safety Audit in accordance with TII guidelines at detailed design.

7.5.155. Residual impacts are predicted to be a slight increase in traffic delays at the R340 /development access junction, with a slight negative long term impact on local traffic and potentially on local businesses (assume from increase in traffic). No cumulative traffic related impacts are predicted as there are no other committed developments in the area. The EIAR also includes in Appendix 11J a Preliminary Temporary Traffic Management Plan to facilitate safe passage of traffic (pedestrians and road users) past proposed construction works (freshwater pipeline) and to ensure the safety of the workforce.

Material Assets

7.5.156. Chapter 14 of the EIAR deals with material assets i.e. physical resources in the environment that may be affected by the development (built services and

infrastructure), not assessed in other chapters of the report. It focuses on potential effects on transport infrastructure (road and transportation infrastructure), the water distribution network and underground and overground services.

7.5.157. The report considers that the temporary works to construct the freshwater rising main, with implementation of traffic management measures, will result in a slight/moderate negative impact on traffic and transport during construction. No predicted impacts are identified during operation of the development, on transport infrastructure. No impacts on passage of boats in Kilkieran Bay are predicted for construction or operation.

7.5.158. During construction potential effects on the Carna-Kilkieran RWSS are identified with the risk of moderate temporary negative effects on underground services, including watermains. During operation, there are no predicted negative impacts on the water supply scheme i.e. as indicated by Irish Water the requirement for drinking water can be met by the RWSS.

7.5.159. During construction the EIAR predicts no negative impacts on the existing storm water drainage infrastructure or foul sewer and at PnM, a significant positive impact arising from the expanded stormwater infrastructure and refurbishment of onsite waste water treatment infrastructure. Potential moderate temporary impacts on existing overground and underground services (including electricity, cable broadband telecommunications) are predicted during construction and no negative effects during operation of PnM.

7.5.160. Mitigation measures include a Traffic Management Plan (Appendix 11J), with local access maintained throughout construction phase of the abstraction and pipeline installation and increased access to PnM site, identification of location of underground/overground services and adoption of best practices in construction works avoid impacts.

7.5.161. With mitigation, no residual negative impacts are predicted during construction. With operation, a positive residual impact is predicted on material assets. Based on review of past grants of planning permission, current projects at design or construction stage and current planning applications, no cumulative impacts are predicted.

7.5.162. **Submissions.** Parties to the appeal raise concerns in respect of the poor state of roads in the area and the impact of the development on, and capacity of, local road infrastructure to cater for the development.

7.5.163. In their decision to refuse permission the PA raise concerns regarding the existence of local road L-52452 in close proximity to the entrance to the site. This matter is addressed in the Planning section of this report. In their report on the planning application, the PA raise concerns in respect of the uncertainty of direction of travel of additional service traffic generated by the development and the lack of site specific measures in the Traffic Management Plan to adequately maintain the function of the public road during construction.

7.5.164. **Assessment.** Having regard to my inspection of the appeal site and having read all of the submissions and technical reports provided by the applicant I am satisfied that the assessment of traffic effects is robust. It is based on reasonable assumptions of likely traffic movements during construction and operation and in its assessment includes an alternative scenario where all HGV traffic arrive from and departs to Kilkieran. This analysis demonstrates that in such circumstances the priority junction at the access to the site would function well within capacity. However, I would accept that the development will significantly increase vehicle movements on the regional road with an almost doubling of peak hour PCUs using the regional road.

7.5.165. I note also that the revised EIAR contains a Stage 1 Road Safety Audit and addresses the issues raised. The EIAR also provides for a subsequent Road Safety Audit at detailed design stage. The Temporary Traffic Management Plan (TTMP) provides site specific details regarding how the function of the local road network will be maintained during construction, including locations of shuttle working, arrangements for local access only and route diversions and horizontal directional drilling for a short narrow section of the R340. The TTMP is a draft document and will be agreed with the PA in advance of commencement. I am satisfied therefore that the proposed development will not give rise to direct, indirect or cumulative effects on road infrastructure. The applicant's assessment of likely effects on remaining infrastructure is not unreasonable and with implementation of proposed mitigation measures, significant effects are unlikely.

Cultural Heritage

7.5.166. Chapter 15 of the EIAR deals with archaeology, architectural and cultural heritage.

7.5.167. The assessment methodology refers to guidelines by the EPA in respect of environmental impact assessment, the Department of Arts, Heritage and the Gaeltacht in respect of archaeological heritage protection and by the Institute of Archaeologists for archaeological assessment and excavation. The area under investigation included the application site, zone of 100m around pumping stations, lakes affected by the development, the marine zone of Kilkieran Bay and 200m corridor along the pipeline route (Figure 15-1). The assessment is based on desk top survey and site inspection.

7.5.168. The report provides an overview of the *archaeological and historic context* for the development (including marine and lacustrine archaeology) and identifies archaeological monuments and built heritage in the vicinity of the site (Figure 15.2 and 15.3 and Table 15.1). Areas of archaeological potential are identified as:

- Lough Skannive - Lakeside setting of abstraction and pumping station, lake bed location of extraction pipe (moderate potential),
- Lough Ierin – Greenfield areas associated with abstraction and pumping station and lakebed (moderate potential).
- PnM site – Greenfield areas (moderate potential).
- Kilkieran Bay – Area of Marine Archaeological Potential located within the indicated intake and outfall zone (moderate potential).
- Other areas – Impacts on dry stone wall/field boundaries along route of pipeline.

7.5.169. Features of *built and cultural heritage* include:

- Built heritage - RC church Kilkieran, northern side of R340 south west of site (RPS 706; NIAH 30407704); Cé Chill Chiaráin (Quay), south of site (NIAH 30407705); vernacular buildings.
- Cultural heritage – Irish language. The EIAR states that the development has the potential to have a significant long term positive impact on the Irish

language and the cultural integrity of the area (decrease in migration, incoming population/workforce). Other local practices and activities (page 15-34).

7.5.170. No impacts are predicted prior to construction (and I assume therefore for the 'do nothing' scenario).

7.5.171. During construction the EIAR identifies potential for encountering previously unrecorded sub-surface remains or deposits of archaeological significance at the site of PnM, Lough Skannive and Lough Ierin and Kilkieran Bay. This includes the proposed physical investigation works in advance of intake/outfall installations at Kilkieran Bay. Installation of intake and effluent pipes by horizontal directional drilling below seabed, dependent on geological conditions, is stated to reduce risk of impacts on marine archaeological resource to negligible levels. Sub-sea groundworks to be confined to two 'punch-out' locations at the eastern end of the pipeline routes, with marine geophysical survey in advance to determine optimum location of intake and outfall pipes. Archaeological review of results of site investigations indicate no deposits of archaeological significance. The development will not have a direct negative impact on or change known archaeological resources, including the pipeline installation (development is removed from known resources).

7.5.172. During operation, changes to pH of lake water and water level fluctuations have potential to impact on known archaeological resources e.g. represented by Crannógs (Table 15-1) which can deteriorate if water levels are reduced (>500mm). However, no change to pH predicted and abstraction designed maximum reduction in water levels determined by Hydrological Studies is considered to lie within acceptable parameters (<100mm). No predicted cumulative impacts are predicted with other planned development in the area.

7.5.173. Mitigation measures are set out in section 15.8 of the report. These include:

- Archaeological testing and/or monitoring by a suitably qualified archaeologist under licence from the Department of Culture, Heritage and the Gaeltacht within the identified areas of archaeological potential (Figures 15.2 - 15.4[6]),

[6] This reference may be incorrect, and should read 15.6 to 15.8 which indicate Areas of Archaeological Potential are also shown in Figure 15.6.

- Initial monitoring of site investigations and pipeline installation works along Callonfish road to determine ground conditions and sub-surface archaeological potential and to identify archaeological constraints/inform level of archaeological input required and/or mitigation measures.
- Geophysical and/or dive survey of Lough Skannive and Kilkieran Bay to determine the underwater archaeological potential of the area of the lake/seabed to be affected by works (to inform mitigation design e.g. advance excavation, monitoring or avoidance).
- Retaining water levels at Lough Skannive and Lough Sheedagh with acceptable parameters <100mm below average seasonal levels during construction and operation.
- Automated water level monitoring system and ongoing active water balance modelling system to control IW and PnM schemes.
- Archaeological monitoring/testing along the shoreline within PnM.
- Archaeological review of advance marine geophysical survey prior to marine investigations.
- A programme of archaeological monitoring of in shore and off shore works and site investigations associated with the intake and outfall pipes.
- Photographic survey of remains vernacular cottage on PnM site.
- Retention and/or reinstatement of vernacular street furniture, roadside feature and structures along pipeline route.

7.5.174. **Submissions.** In the course of the planning application the Development Applications Unit recommended conditions in respect of the proposed development, to carry out pre-development archaeological assessment and monitoring of groundworks. Their subsequent report recommended that the applicant's mitigation measures be carried out in full.

7.5.175. **Assessment.** Having regard to my inspection of the appeal site, the detailed assessment of the cultural heritage context for the proposed development presented in the EIAR including the distance of the site from above ground items of built heritage, the potential for sub-surface archaeology in greenfield areas and on the

lake/sea bed and the proposals for mitigation which are integrated with the project design I am generally satisfied that the development will not give rise to direct, indirect or cumulative impacts on cultural heritage. However, as stated I have concerns that the proposals for water abstraction have not had regard to the effects of climate change may give rise to more significant changes in water levels and/or pressure on the catchment. In such circumstances there is a risk of adverse effects on water level dependent archaeology.

Landscape

7.5.176. Chapter 13 of the EIAR deals with landscape and visual impact. It is based on desktop study and site survey and is carried out in accordance with the industry standards (UK Landscape Institute & Institute of Environmental Management and Assessment, Guidelines for Landscape and Visual Impact Assessment, 2013) and the EPA's Guidelines in Information to be Contained in EIARs, draft 2017). It considers the effects of the development on landscape character (landscape sensitivity, magnitude of change and significance of effect) and on views and visual amenity (sensitivity of viewpoint/visual receptor, magnitude of change to view, significance of visual effects).

7.5.177. The appeal site lies in Landscape Character Area 17 Carraroe (Cashla Bay to Glencoh) which is described as a low-lying area of rugged rocky outcrops and wet areas. The landscape is designated as having High Landscape Value and High Landscape Sensitivity. A protected view (View 98) lies to the south of the site. The study area associated with the landscape and visual impact assessment is shown in Figure 13.3. It includes the PnM site and its wider context and the landscape context for the water abstraction/transfer works.

7.5.178. The EIAR considers the PnM site to comprise a sensitive *landscape* for the proposed development i.e. the landscape has limited or low capacity for accommodating the type of development proposed. In contrast, the landscape context for the offsite works is considered to be low to medium having regard to the minimal interventions above ground.

7.5.179. Construction phase effects are considered to comprise a high magnitude of change for a duration of 3 years (PnM) and low magnitude of change (off site works). Overall construction landscape effects (sensitivity of landscape + magnitude of

change) are considered to be Moderate-Significant for PnM and Slight, neutral and short term for off-site works.

7.5.180. Operational phase effects are expected to result in a Medium-High magnitude of change (by virtue of the large scale of the buildings in the context of the surrounding pattern of built form, rural landscape with rugged scenic character). Offsite works are considered to have a Negligible to Low magnitude of change (affect few landscape receptors, works of limited extent with no effects on landscape character). Overall operational landscape effects are considered to vary from Slight to Moderate, depending on the area e.g. neutral from bay, adverse from elevated areas. Landscape effects of offsite works are considered to be Not Significant to Slight (works near Lough Ierin Not Significant, neutral; works near Lough Skannive Not Significant-Slight adverse).

7.5.181. Construction phase *visual effects* (arising from earthworks, site works, drilling, stockpiling of materials and effects of construction compound) are considered to be Moderate, adverse and temporary in nature and prominent from viewpoints closer to the site. Operation phase *visual effects* are assessed from 20 no. viewpoints to represent viewers in the vicinity of the site (Figure 13-4 and 13-5). Photomontages of views of the development from each viewpoint is presented in Appendix 13-2 (Photomontage Booklet – April 2021). The photomontages depict the likely view at years 5-7 with planting established and with retention of mature trees to the north of the site if possible. Summary of visual effects is set out in Table 13-7 with effects based on assessed sensitivity of visual receptor and magnitude of change. At distance from PnM (viewpoint 1, 2, 6 and 8) visual effects range from Moderate to Slight to Neutral as consequence of distance, low level of buildings and absence of effects on protected or panoramic views. Viewpoint 7 is closer to PnM than the former viewpoints and effects are slight adverse (due to relative proximity) for similar reasons. For the viewpoints closest to the development, nos. 3, 4, 5 and 9-16 impacts are greatest for those properties closest to the site, with impacts greater in the short term and reduced in the longer term. Greatest adverse effects arise in respect of viewpoints 5 (Moderate), 9 (Moderate), 12 (Significant – short term) and 14 (Moderate to Significant – short term). Adverse effects largely arise from proximity of development and removal of long distance views. Effects of off-site works are Imperceptible to limited visibility of structures.

7.5.182. Included in Appendix 13-3 of the EIAR is a Glint and Glare Assessment of the solar photovoltaic panels on the roofs of buildings at PnM. The assessment concludes that with modest mitigation measures (tree planting along northern and southern boundaries of development), there are low impacts on some residential receptors and no impacts on roads or on aviation.

7.5.183. Appendix 13.4 comprises a Massing and Local Assimilation Study. The report summarises the strategies that have been implemented in the design of the overall site to integrate the development into the landscape. It includes reference to the three zones around which the development is structured. Zone 1 is situated closest to the public road and provides vernacular scale community infrastructure. Zone 2 in the mid part of the site, at a lower elevation than the public road, reduces the scale of the larger buildings and uses material and finishes to reduce the visual mass of the structures to reflect the colours and textures of the local landscape. Zone 3 adjacent to the coast focuses on views from the sea. It locates buildings of a smaller scale and mass to this part of the site and uses split level within buildings and green roofs to further reduce the impact of structures.

7.5.184. Mitigation measures are set out in section 13.8 of the EIAR. These refer to the design of the scheme, the objective of which has been to work with the existing topography (including roof design), choice of materials and landscaping (including planting along north eastern and south western boundaries). Residual effects are therefore as predicted and summarised in Table 13.7.

7.5.185. No cumulative impacts are predicted due to the absence of other proposed developments in the receiving environment. Do nothing scenario it is anticipated that existing activities will continue.

7.5.186. **Submissions**. Parties to the appeal argue that landscape and visual issues have been addressed as part of the proposed design. The PA's report on the proposed development, further to the submission of FI, raises concerns regarding the scale and massing of the structures on site, relative to the scale of existing development adjacent to the site and the ability of the scenic coastal landscape to assimilate these structures (notably Freshwater and Seawater Recirculating Aquaculture system buildings and Seaweed Added Value facility). The report states that the development would therefore be contrary to policy LCM 1 and Objective

LCM 2 of the CDP. However, in their decision to refuse permission this reason is not cited. In the appeal, the applicant refers to the further information submitted to address the PAs concerns in respect of landscape and visual impact and refers to the design of development to integrate with the landscape, make use of site topography, relate to the height of adjoining structures, utilise materials and colours which reflect the landscape context of the development. The appellant also refers to other larger structures in the landscape along the stretch of coastline. With regard to visual effects, the appellant argues that the development will not adversely affect the protected view for Kilkieran or wider views in the landscape. It is acknowledged that some views in close proximity to the development will undergo more significant change, but with mitigation measures and time softening views (e.g. as vegetation matures/materials weather). Visual impact, overshadowing and overbearing effects on properties to the south/south west of the site are not considered to arise due to distance or properties from development, relative heights and orientation.

7.5.187. **Assessment.** The proposed development is situated in a rural coastal environment. It is characterised by the rugged coast, largely open views and backdrop of rising topography. Tree cover is limited, and development is largely but not wholly domestic in scale.

7.5.188. The proposed development is a substantially bigger in scale that existing development in the immediate area of the site, although there are larger structures in the wider area, and would significantly and permanently change the landscape character of the immediate area of the site and views it.

7.5.189. However, I would accept that it has been designed to maximise the topography of the site with buildings located, sized and finished to minimise landscape and visual effects. Consequently, I am satisfied that whilst evident in the landscape the development sited in the expansive landscape will not form a dominant or obtrusive element when viewed from the sea, from the wider area or protected view 98. In closer views, notably from passing the site, from elevated lands immediately north west of it and from residential properties north east and southwest, view changes will be much more significant with long term effects on the visual amenity of the properties. However, significant mitigation measures are proposed are proposed e.g. landscape earth embankment to separate dwelling north of the site from the Seaweed Added Value facility, external treatment of buildings

facing properties to south and planting along boundary. In the longer term the measures will reduce visual effects but the visual/landscape context for nearby receptors will nonetheless be significantly altered by the development.

7.5.190. Having regard to the details of the glint and glare assessment, relative orientation of development and distance from nearest properties, neither significant glint and glare or overshadowing are likely to arise (there may be some element of overshadowing from the landscaped embankment for the property to the north of the site, VP9, Figure 13-5).

7.5.191. **Conclusion in respect of material assets, cultural heritage and landscape.** Having regard to the foregoing, I am satisfied that the subject development, with subject to proposed mitigation measures, will not give rise to significant direct, indirect or cumulative effects on material assets or cultural heritage. Whilst the development is a substantial structure in the predominantly rural coastal landscape I do not consider that it would detract from landscape character of the area (i.e. effects would be largely local). Visual effects are likely to arise and be significant in the short term for in properties in closest proximity to the site, including those immediately north east and south west of it. These impacts will be mitigated in the longer term by weathering of materials and maturing of landscaping.

Interactions

7.5.192. Chapter 17 of the EIAR deals with interactions. I am satisfied that these have been accurately identified and are addressed in the main sections of the EIAR (summarised in section 17.2).

7.6. Reasoned Conclusion

7.6.1. Having regard to the examination of environmental information contained above, and in particular to the EIAR and supplementary information provided by the developer, and the submission from the planning authority, prescribed bodies, appellants, and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment are in respect of population and human health, biodiversity, water, climate, archaeology and landscape. For the reasons below, I consider that effects on population and

landscape can be mitigated by the measures proposed by the applicant, such that effects will not be significant.

- Population and human health. Short term effects on nearby residential properties as a consequence of noise during construction. Long term effects on nearby residential properties as a consequence of increased noise during operation and significant alterations to the landscape character of the area. Long term positive social, economic and linguistic benefits to the area.

  Noise during construction and operation will be mitigated by standard and site specific noise reduction measures and building materials. Landscape effects are mitigated by the design of the development which has evolved in line with the topography and context of the site, use of materials and landscaping.

- Landscape. Long term effects on the landscape character of the area and immediate environment of the site. Impacts on landscape are mitigated by the measures set out above.

7.6.2. However, I have concerns regarding the following effects in respect of water, biodiversity, archaeology and climate:

- Water, biodiversity and archaeology – The applicant's water balance model does not include for the effects of climate change on the proposed abstraction regime. The absence of effect of climate change may have significant consequences for abstraction and/or potential significant effects on biodiversity, the public water supply and water regime dependent archaeological features. It is also not clear if the water balance model is predicated on works to Loughaunore, which are not included in the proposed development.

- Climate – The EIAR does not include an assessment of the likely effects of the development in respect of climate, notably the inclusion of the likely effects of climate change on the proposed abstraction regime from Lough Skannive. In the absence of this, the EIAR does not comply with the requirements of the EIA Directive.

7.6.3. In the absence of further information I consider the omissions and/or risk of significant adverse effects are unquantified and sufficient to warrant refusing permission for the development

7.7. Appropriate Assessment

Screening

7.7.1. **Compliance with Article 6(3) of the Habitats Directive.** The requirements of Article 6(3), screening for appropriate assessment under part XAB, section 177U of the Planning and Development Act 2000 (as amended), are considered fully in this section.

7.7.2. **Background.** The applicant has submitted a report entitled 'Appropriate Assessment – Volumes 1 and 2, Rev. 3.0 – Final, August 2021' (the AA Report) as part of the planning application. Screening for appropriate assessment is presented in Chapter 3. The screening exercise has been prepared in line with current best practice guidelines. It provides a description of the proposed development and identifies European sites within the zone of influence of the development. It has been prepared following consultation with Inland Fisheries Ireland, Irish Water, EPA Catchments Team, the Planning Authority and the National Parks and Wildlife Service. The report provides a detailed description of the proposed development, including detailed construction methodology, and identifies European sites within the zone of influence of the project. The report has regard to associated reports set out in the EIAR. The screening report concludes that in the absence of best practice and pollution control, avoidance and mitigation measures, the development has potential to impact on the Qualifying Interests/Special Conservation Interests and Conservation Objectives of European sits and should be subject to a Stage 2 Appropriate Assessment. European sites potentially affected by the development are Kilkieran Bay and Islands SAC (site code 002111) and Connemara Bog Complex SAC and SPA (site codes 002034 and 004181 respectively).

7.7.3. Having reviewed the documents on file and including all of the submissions made, I am not satisfied, for the reasons stated in this report, that the information allows for a complete examination and identification of any potential significant effects of the development, alone, or in combination with other plans and projects on European sites.

7.7.4. **Screening for Appropriate Assessment- Test of likely significant effects.** The project is not directly connected with or necessary to the management of a European

Site and therefore it needs to be determined if the development is likely to have significant effects on a European site(s).

7.7.5. **Description of the development.** The applicant provides a description of the project in section 3.2 of the screening report and in section 3 of the EIAR. In summary, the development comprises:

- The construction of a marine innovation park with research, development, innovation and educational facilities operating cooperatively with aquaculture and value added seaweed marine activities.
- Abstraction of freshwater from Lough Skannive/Lough Ierin and seawater from Kilkieran Bay for use by various facilities and wastewater treatment and discharge via a marine outfall to Kilkieran Bay.
- Utilities and infrastructure to support the development, build out and operation of the facilities.
- A proposed peatland restoration area comprising 16.3ha of blanket bog, c.6.2km to the north west of An Spidéal, County Galway.

7.7.6. PnM will require up to 2.5MLD of untreated freshwater supply to serve the proposed marine and aquaculture industries. 0.2MLD of treated water will be required for potable water. In agreement with Irish Water, proposed abstraction of freshwater for the development is from Lough Skannive, when prevailing hydrological conditions allow, via impoundment in Lough Ierin and pumped pipeline to PnM. (Lough Ierin and the upstream Loughaunore feed Irish Water's Carna-Kilkieran Water Supply Scheme). Abstraction from Lough Skannive will be strictly regulated to adhere to UKTAG (United Kingdom Technical Working Group – Water Framework Directive) guidance regarding maximum lake area and outlet flow changes associated with abstractions in order to ensure good status is maintained at Lough Skannive and Dooletter River East (outflow from Lough Skannive). Controls and operation procedures developed in conjunction with IW will ensure the public water supply scheme raw water demand (to include PnM requirement for potable water) from Lough Ierin and Loughaunore impoundments take precedence over PnM freshwater demand. In combination volume of water to be abstracted from the Skannive system (PnM and IW) is 4.8MLD. Compensatory flows will be provided to the channel between Lough Ierin impoundment and Lough Skannive along with an improved fish

pass system to facilitate passage of Juvenile eels. Construction of the treated effluent outfall and seawater intake pipe in Kilkieran Bay will be by means of horizontal directional drilling with the intake coming back to the surface (punch out location) in an appropriate location to avoid sensitive habitats.

7.7.7. Appendices to Chapter 3 of the EIAR provide details in relation to construction and include Construction and Environmental Management Plan (with details of methodology for horizontal directional drilling to install marine outfall and seawater intake), Water Quality Management System for abstraction and pipeline construction works and PnM site works, Invasive Species Management Plan and Waste Management Plans.

7.7.8. The development site is described in section 3.3 of the AA Report It is informed by aquatic, terrestrial and marine surveys of the subject site and its zone of influence (section 3.3.1 of AA Report). Zone of influence includes the lake and river system from which abstraction is proposed (Lough Skannive, Lough Sheedagh, Dooletter River East, Lough Ierin impoundment and Loughaunore impoundment), the pipeline route, PnM site (including Loch an Síog stream and Kilkieran Bay) and the bog restoration site. Survey work was carried out in accordance with relevant codes of practice. It included lake habitat surveys, survey of riverine sites and underwater survey of marine sites.

7.7.9. Habitats are mapped in Appendix A of the AA Report. Key aspects of the environment are:

- Lough Skannive – Borders Connemara Complex SAC (002034) and the lough contains macrophyte communities which represent the Annex I habitat '[3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletaliia uniflorae)*, a qualifying interest of the Connemara Complex SAC. Blanket bog on the northern side of Lough Skannive which corresponds to priority Habitats Directive habitat 'blanket bots (*if active)' [7130].
- Lough Skannive and Lough Ierin – Proposed pump stations and intake works comprises wet heath, corresponding to Habitats Directive habitat 'North Atlantic wet heath with Erica teralix' [4010] (lie outside of the SAC).

- Pipeline route – Habitat alongside pipeline route varies from blanket bog/wet heath, cutover bog in the area of Lough Skannive/Ierin/Loughaunore and becoming more artificial/managed towards Kilkieran.
- PnM – Comprises a north west zone of modified and amenity habitats; a large central zone dominated by blanket bog and wet heath; a zone of scrub and associated habitats on former pasture near the sea; and a littoral zone comprising mostly exposed rocky shore and some salt marsh towards the top of the littoral zone. The areas of blanket bog correspond with the priority Habitat Directive habitat type 'blanket bogs (*if active bog) [7130]. Wet heath corresponds to the Habitats Directive habitat 'North Atlantic wet heaths with *Erica tetralix'* [4010]. Salt marsh habitat corresponds to Habitats Directive habitat 'Atlantic salt meadows' [1330].
- Waterbodies – The site lies in the Galway Bay North catchment (WFD) and within the Dúleitir_Thiar_SC_010 sub catchment. Waterbodies interacting with the development have the following waterbody and risk status (as agreed with the EPA):

    Lough Skannive – WFD status 'good', not at risk. Lough Skannive and outflow from Loughaunore contain brown trout and European eel. Upstream of Carna village, outflow from Lough Skannive also has Atlantic salmon.

    - Loughaunore impoundment - WFD status 'good', not at risk.
    - Lough Ierin impoundment – Not currently a WFD lake. Will be characterised as a WFD water body for assessment in next cycle. For the subject development is assessed as a modified lake comprising impoundment with existing abstraction whose outlet channel runs dry during the year.
    - Lough Sheedagh – Not a WFD lake. Assessed as of 'good' status in assessment.
    - Dooletter River East – EPA currently completing WFD assessment for the river. EPA has confirmed that it will not be 'high' status. Assessed as of 'good' status in assessment.

- Loch na Síog – Not a WFD watercourse.
- Kilkieran Bay - WFD status 'good', not at risk. Kilkieran Bay is designated as a Special Area of Conservation, Kilkieran Bay and Islands SAC (site code 002111). Conservation interests are described below. Seawater intake pipe and wastewater outfall pipes lie within the marine SAC (Figure 3-17, AA Report). The bay is characterised by high tidal velocities and consequential high levels of turbulence, dilution and dispersion effects, a short residence time and significant levels of sediment transport.
- Watercourse crossings. Between Lough Ierin and PnM the pipeline crosses the following (section 3.3.4.2, AA):
  - An_Aird_Mhór_010 – Unassigned status. Risk 'review' (potential pressures of agriculture and septic tanks). Contains European eel.
  - Loch na Sióg Stream - Coill_Sáille_010 – Unassigned status. Risk 'review' (potential pressures of forestry, peat, agriculture and septic tanks). Contains brown trout and European eel. Flows through PnM site and outfalls to Kilkieran Bay, via a saltmarsh c.320m downstream of PnM site. Saltmarsh and Kilkieran Bay form part of Kilkieran Bay and Islands SAC.

- Peatland restoration area (Appendix E of AA Report) – Selected site is an area of drained Lowland blanket bog (16.3ha) in mosaic with Wet Heath and Cutover bog, classified as having potential for restoring to priority Annex I active 'blanket bog [7130]' and wet heath [4010]'. Site is within Connemara Bog Complex SAC and immediately adjacent to Connemara Bog Complex SPA.

7.7.10. Taking account of the characteristics of the proposed development in terms of its location and the scale of works, the following issues are considered for examination in terms of implications for <u>likely significant effects on European sites</u>:

- Construction:

- Disturbance, fragmentation and loss of habitat arising from construction works within Kilkieran Bay (intake and outfall infrastructure).
- Displacement or exclusion of species as a result of disturbance/habitat loss.

- Operation:
  - Disturbance, fragmentation and loss of habitat arising from operation of development within Kilkieran Bay (intake and outfall infrastructure).
  - Displacement or exclusion of species as a result of disturbance/habitat loss.
  - Eutrophication of marine environment as a result of discharge of wastewater.
  - Local changes in turbidity, salinity and temperature in the marine environment at wastewater discharge.
  - Hydrological impacts on water dependent habitats and species with changes to water levels with abstraction from Lough Skannive.
  - Air emissions from on-site processes, with impacts on affected habitats and species.

7.7.11. **Submissions and Observations.** Parties to the appeal have raise concerns regarding the impact of abstraction from Lough Skannive on Connemara Bog Complex SAC, location of the development in a European site, the impact of the development (including from suspended solids during construction and discharge from WWTP during operation) on protected sites, the absence of a waste discharge licence and the risk of cumulative effects of the development with salmon farming/aquaculture in Kilkieran Bay (including assimilative capacity of Kilkieran Bay and effect of movement of farmed smolts to sea).

7.7.12. Prescribed bodes state that there should be no lacunae or doubt in the assessment of effects on European sites and IFI raise concerns regarding the destination of smolts arising from the development and potential effects on wild salmon. The Development Applications Unit state that they are not satisfied that the effects on marine Annex I habitats have been adequately assessed and *de minimus* loss of habitat.

7.7.13. In their decision to refuse permission, and as set out in the planning report dated 12th July 2021, the planning authority consider that having regard to the location of the development relative to European sites, information contained in the planning application, their concerns in relation to potential direct, indirect, in combination and cumulative impacts, uncertainties in respect of mitigation measures, deficiencies in the NIS concerning potential impacts on qualifying interests of European sites and absence of a satisfactory assessment of in-combination effects, adverse effects on the integrity and conservation objectives of the European sites in the vicinity cannot be ruled out. They consider that as adverse effects cannot be ruled out the development would materially conflict with policies and objectives of the Galway County Development Plan.

7.7.14. **European Sites.** The applicant has identified a zone of influence of the project by reference to potential sources of pollution, likely receptors and pathways for effects by way of land, air and water. This approach seems reasonable, with effects by way of land limited to within 100m of construction, 15km for air impacts, all freshwater bodies downstream of the development until such point as they discharge to sea and 15km for marine impacts. Impacts as a consequence of effects on groundwater may also arise within 100m of the footprint of the development (underlying granite bedrock, limited bedrock transmissivity, likely short flow paths).

7.7.15. The summary of European sites within 15km of the development is set out below. It includes Kilkieran Bay and Islands SAC which the project extends into.

European Site	Qualifying Interest/Special Conservation Interest	Conservation Objectives	Distance	Connections and Possible Effects	Considered further
The Twelve Bens/Garruan Complex SAC (002031)	• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] • Alpine and Boreal heaths [4060] • Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the Rhynchosporion [7150] • Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Oligotrophic waters, Oligotrophic to mesotrophic standing waters, Old sessile oak woods, Atlantic salmon, Otter, Slender Naiad). To restore the favourable conservation condition of qualifying interest with reference to defined attributes and targets (Alpine and Boreal heaths, Blanket bogs, depressions on peat substrates, Siliceous scree, Calcareous rocky slopes, Siliceous rocky slopes, Freshwater pearl mussel).	14.1km	This large site lies to the north of the appeal site and is physically removed from it separated by elevated lands. No surface water or groundwater hydrological connection exists. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.

	• Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Najas flexilis (Slender Naiad) [1833]				
Rosroe Bog SAC (000324)	• Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the Rhynchosporion [7150]	To restore the favourable conservation condition of qualifying interest with reference to defined attributes and targets (Blanket bog, Depressions on peat substrates).	10.2km	Physically removed from appeal site. Lies to the north west of the site, separated by mountains and Bay. No hydrological connection by surface or groundwater. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.
Maumturk Mountains SAC (002008).	• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Northern Atlantic wet heaths with Erica tetralix [4010] • Alpine and Boreal heaths [4060] • Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the Rhynchosporion [7150]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Oligotrophic waters, Salmon, Slender Naiad). To restore the conservation condition of qualifying interest with reference to	14.3km	Physically removed from site. Lies to the north of it, separated by mountains. No hydrological connection by surface or groundwater. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.

	• Siliceous rocky slopes with chasmophytic vegetation [8220] • Salmo salar (Salmon) [1106] • Najas flexilis (Slender Naiad) [1833]	defined attributes and targets (Northern Atlantic wet heath, Alpine and Boreal heaths, Blanket bogs, Depressions on peat substrate, Siliceous rocky slopes).			
Lough Nageeron SAC (002119)	• Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] • Najas flexilis (Slender Naiad) [1833]	To restore the favourable conservation condition of qualifying interests with reference to defined attributes and targets (Oligotrophic to mesotrophic standing waters, Slender Naiad).	6.1km	Physically removed from site to west. No hydrological connection by surface or groundwater. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.
Kilkieran Bay and Islands SAC (002111)	• Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Machairs (* in Ireland) [21A0] • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (mudflats and sandflats, coastal lagoons, large shallow inlets and bays, Reefs, Lowland hay meadows, Slender naiad). To restore the favourable conservation condition of qualifying interest	Partially within.	Direct hydrological connection via abstraction point and wastewater outfall. Site directly adjoins Kilkieran Bay. Potential for effects as a consequence of air pollution given proximity of development to European sites. Potential for cumulative effects with other activities in Kilkieran Bay.	Yes.

	uniflorae and/or Isoeto-Nanojuncetea [3130] • Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] • Lutra lutra (Otter) [1355] • Phoca vitulina (Harbour Seal) [1365] • Najas flexilis (Slender Naiad) [1833]	with reference to defined attributes and targets (Atlantic salt meadows, Mediterranean salt meadows, Machairs, Otter, Harbour seal).			
Inishmore Islands SAC (000213)	• Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170] • Humid dune slacks [2190] • Machairs (* in Ireland) [21A0] • European dry heaths [4030] • Alpine and Boreal heaths [4060]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Reefs, Perennial vegetation of stony banks, Vegetated sea cliffs, Embryonic shifting dunes, shifting dunes along shoreline, Dunes with Salix repens ssp. Argentea, Humid dune slacks, European dry heaths, Semi-natural dry grasslands and scrubland facies, lowland hay meadows, limestone pavements, submerged or partially submerged sea caves,	15km	Physically removed. No hydrological connection by surface or groundwater. Lies to the south of the site. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.

	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] • Limestone pavements [8240] • Submerged or partially submerged sea caves [8330] • Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	Narrow-mouthed Whorl Snail). To restore the favourable conservation condition of qualifying interest with reference to defined attributes and targets (Coastal lagoons, fixed coastal dunes, Machairs). To review the status of Alpine and boreal heaths.			
Dog's Bay (001257)	• Annual vegetation of drift lines [1210] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • European dry heaths [4030]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Embryonic shifting dunes, European dry heaths). To restore the favourable conservation condition of qualifying interest with reference to defined attributes and targets (Annual	12.4km	Physically removed to northwest of appeal site. No surface water or groundwater hydrological connection. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.

		vegetation of drift lines, Shifting dunes along shoreline, Fixed coastal dunes).			
Cregduff Lough SAC (001251)	• Transition mires and quaking bogs [7140] • Najas flexilis (Slender Naiad) [1833]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Transition mires and quaking bogs, Slender Naiad).	11.3km	Physically removed, to north west of appeal site. Separated by mountains and Bay. No surface water or groundwater hydrological connection. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.
Connemara Bog SAC (002034)	• Coastal lagoons [1150] • Reefs [1170] • Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] • Natural dystrophic lakes and ponds [3160] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	To maintain the favourable conservation condition of the qualifying interests with reference to defined attributes and targets (Coastal lagoons, Reefs, Oligotrophic waters, Oligotrophic to mesotrophic standing waters, Natural dystrophic lakes and ponds, Water courses of plain to montane levels, Molina meadows, Old sessile oak woodlands, Otter, Slender Naiad).	1km	Forms a boundary with Lough Skannive's northern shoreline. Potential for effects on littoral habitats/species if water abstraction regime impacts on water levels at northern shore of lake. Potential for cumulative effects with Irish Water abstraction from Lough Ierin (Lough Ierin discharges to Lough Skannive). Peatland restoration area in SAC. Potential for direct positive effects on habitat and indirect negative effects (disturbance during restoration works).	Yes.

	• Northern Atlantic wet heaths with Erica tetralix [4010] • European dry heaths [4030] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Depressions on peat substrates of the Rhynchosporion [7150] • Alkaline fens [7230] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Euphydryas aurinia (Marsh Fritillary) [1065] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Najas flexilis (Slender Naiad) [1833]	To restore the favourable conservation condition of qualifying interest with reference to defined attributes and targets (Northern Atlantic wet heaths, European dry heaths, Blanket bogs, Transition mires and quaking bogs, Depressions on peat substrates, Alkaline fens, Marsh fritillary, Salmon).		Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	
Connemara Bog SPA (004181)	• Cormorant (Phalacrocorax carbo) [A017] • Merlin (Falco columbarius) [A098] • Golden Plover (Pluvialis apricaria) [A140] • Common Gull (Larus canus) [A182]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of the SPA.	7.0km	Peatland restoration area is adjacent to SPA. Potential indirect effects arising from disturbance during bog restoration work.	Yes.

Slyne Head to Ardmore Point SPA (004159)	• Barnacle Goose (Branta leucopsis) [A045] • Sandwich Tern (Sterna sandvicensis) [A191] • Arctic Tern (Sterna paradisaea) [A194] • Little Tern (Sterna albifrons) [A195]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of the SPA.	4.0km	Physically removed. No hydrological connection by surface or groundwater. Lies south west and west of appeal site. Air pollution unlikely having regard to distance, location relative to site and dispersion effects (see conclusions in EIA section of this report).	No.

Table 1. Summary of European Sites within the Zone of Influence of the Development

7.7.16. **Identification of likely effects**. Impacts on European sites may arise from construction and operation. Construction:

- Direct effects on habitats and species by way of land take, disturbance and habitat loss with installation of intake and outfall pipes (Kilkieran Bay SAC).
- Indirect effects on habitats and species by way of disturbance from construction and bog restoration works (Kilkieran Bay SAC, Connemara Bog SPA).
- Contamination of surface and groundwater by way of increased sedimentation and other pollutants with potential impacts on downstream water quality in protected sites (Kilkieran Bay SAC, Connemara Bog Complex SAC).

7.7.17. Operation:

- Indirect effects on water dependent habitats and species within Connemara Bog Complex SAC from changes to hydrological regime as a consequence of water abstraction from Lough Skannive.
- Disturbance, fragmentation and loss of habitat arising from operation of project within Kilkieran Bay (intake and outfall infrastructure).
- Eutrophication, local changes in turbidity, salinity and temperature in the marine environment as a consequence of wastewater discharge.
- Air emissions from on-site processes, with impacts on affected habitats and species.

7.7.18. In addition, there is potential for cumulative effects in Lough Skannive (with Irish Water abstraction) and in Kilkieran Bay with other activities in the Bay e.g. fish farming in Kilkieran Bay.

7.7.19. In summary, construction and operational effects of the proposed development are confined to European sites in the immediate area of the appeal site and European sites which are hydrologically connected to it. There is therefore a risk of significant effects on Kilkieran Bay and Islands SAC, Connemara Bog Complex SAC and Connemara Bog Complex SPA and further assessment is required.

7.7.20. **Mitigation measures.** No measures designed or intended to avoid or reduce any harmful effects of the project on a European Site have been relied upon in this screening exercise.

Screening Determination

7.7.21. The proposed development was considered in light of the requirements of Section 177U of the Planning and Development Act 2000 as amended. Having carried out Screening for Appropriate Assessment of the project, it has been concluded that the project individually (or in combination with other plans or projects) could have a significant effect on European Site Nos. 002111 (Kilkieran Bay and Islands SAC), 002034 and 004181 (Connemara Bog Complex SAC and SPA), in view of the site's Conservation Objectives, and Appropriate Assessment (and submission of a NIS) is therefore required.

Appropriate Assessment

7.7.22. **Screening Determination.** Following the screening process, it has been determined that Appropriate Assessment is required as it cannot be excluded on the basis of objective information that the proposed development individually or in-combination with other plans or projects will have a significant effect on the following European sites:

- No. 002111, Kilkieran Bay and Islands SAC.
- No. 002034, Connemara Bog Complex SAC.
- No. 004181, Connemara Bog Complex SPA.

7.7.23. The possibility of significant effects on other European sites) has been excluded on the basis of objective information (site nos. 000213, 000324, 001251, 001257, 002008, 002031, 002119 and 004159). Measures intended to reduce or avoid significant effects have not been considered in the screening process.

7.7.24. **The Natura Impact Statement.** The applicant has included a Natura Impact Statement (the NIS) in chapter 6 of the applicant's Appropriate Assessment Report. The report states that it identifies, in light of best scientific knowledge in the field, all aspects of the proposed project that have the potential either individually or in combination with other plans and projects, to affect Kilkieran Bay and Islands SAC

and Connemara Bog Complex SAC in view of their conservation objectives. The report refers to survey work conducted, relevant studies in respect of the local environment and consultations undertake with statutory bodies. It has regard to proposed mitigation measures and concludes that with the implementation of these, any residual effects are assessed as being insignificant in the light of the sites Conservation Objectives. The NIS concludes that, in view of best scientific knowledge and on the basis of objective information, the proposed project, either on its own or in combination with other plans and projects and with the implementation of the mitigation measures proposed, will not adversely affect the integrity of Kilkieran Bay and Islands SAC, the Connemara Bog Complex SAC or the Connemara Bog Complex SPA and that no reasonable scientific doubt remains in that regard.

7.7.25. **European Sites.** The following sites are subject to appropriate assessment.

No. 002111, Kilkieran Bay and Islands SAC.

7.7.26. This substantial site in County Galway extending from Keeraun Point, south of Carraroe, westwards to Mace Head, west of Carna, is described in the NPWS Site Synopsis as *'a large area of open marine water, many islands and rocky islets, and the coastline is much indented with a series of bays (notably the inter-connected Kilkieran Bay and Greatman's Bay) channels and inlets. The entrances of the bays face the prevailing south-westerly winds and they are subject to strong tidal streams as the sea funnels between islands and through channels. A number of streams, lakes and lagoons drain into the bays. The bedrock of the site is igneous, composed of granite, felsite and other intrusive rocks rich in silica. Generally, the site has a rocky shoreline which in most places gives way to mud in shallow water. The surrounding land is dominated by lowland blanket bog, with rock outcrops and small hills to the north'.* The marine habitats found within Kilkieran Bay and Greatman's Bay are stated to be of very high conservation value, with a wide variety of habitats and species, including a high number of species that are rare or considered to be worthy of conservation in Ireland. Habitats and species of conservation interest are listed in Table 2.

No. 002034, Connemara Bog Complex SAC.

7.7.27. This site is also extensive, encompassing the majority of the south Connemara lowlands in County Galway. The NPWS Site Synopsis states that '*The site supports a wide range of habitats, including extensive tracts of western blanket bog, which form the core interest, as well as areas of heath, fen, woodlands, lakes, rivers and coastal habitats. The site is underlain predominantly by various Galway granites, with small areas along the northern boundary of Lakes Marble, schist and gneiss. The Roundstone Bog area has a diverse bedrock geology composed mainly of the basic intrusive rock, gabbro. An area of rock, possibly Cambrian in age, called the Delaney Dome Formation occurs in the north-west of this area. Gabbro also occurs in the Kilkieran peninsula and near Cashel. The whole area was glaciated in the last Ice Age which scoured the lowlands of Connemara'.* Habitats and species of conservation interest are listed in Table 3.

No. 004181, Connemara Bog Complex SPA.

7.7.28. This European site covers much of south Connemara lowlands. It is described in the NPWS Site Synopsis as '*characterized by areas of deep peat surrounded by heath-covered rocky outcrops. The deeper peat areas are often bordered by river systems and the many oligotrophic lakes that occur, resulting in an intricate mosaic of various peatland/wetland habitats and vegetation communities; these include Atlantic blanket bog with hummock/hollow systems, inter-connecting pools, Atlantic blanket bog pools, flushes, transition and quaking mires, as well as freshwater marshes, lakeshore, lake and river systems'*. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species Cormorant, Merlin, Golden Plover and Common Gull (see Table 4).

7.7.29. **Aspects of the proposed development.** The main aspects of the proposed development that could adversely affect the conservation objectives of European sites include:

- Construction:
    - Direct effects on habitats and species by way of land take, disturbance and habitat loss with installation of intake and outfall pipes (Kilkieran Bay SAC).

- Indirect effects on habitats and species by way of disturbance from construction and bog restoration works (Kilkieran Bay SAC, Connemara Bog SPA).
- Contamination of surface and groundwater by way of increased sedimentation or other pollutants with potential impacts on downstream water quality in protected sites (Kilkieran Bay SAC, Connemara Bog Complex SAC).

- Operation:
  - Indirect effects on water dependent habitats and species within Connemara Bog Complex SAC from changes to hydrological regime as a consequence of water abstraction from Lough Skannive.
  - Disturbance, fragmentation and loss of habitat arising from operation of project within Kilkieran Bay (intake and outfall infrastructure).
  - Eutrophication, local changes in turbidity, salinity and temperature in the marine environment as a consequence of wastewater discharge.
  - Air emissions from on-site processes, with impacts on affected habitats and species.
  - Cumulative effects in Lough Skannive (with Irish Water abstraction) and Kilkieran Bay with other activities in the Bay e.g. fish farming in Kilkieran Bay.

7.7.30. **Assessment of effects.** In Tables 2, 3 and 4 the likely effects of the development on individual conservation objectives are examined, having regard to the information contained in the applicant's NIS, the attributes and targets in respect of the conservation objective, the Natura 2000 standard data forms and the Conservation Objectives supporting documents for the sites available on the NPWS website, as relevant. Conservation objectives which may be affected by the development are discussed below in 'Discussion'.

Table 1 - Kilkieran Bay and Islands SAC

Kilkieran Bay and Islands SAC, site code 001140. Potential for adverse effects – Construction – water pollution (increased runoff, accidental spills cement, hydrocarbons), noise and disturbance, direct loss of habitat. Operation – noise, disturbance, water pollution (chemical spills, sedimentation, surface water runoff, release of waste water to marine environment (eutrophication, turbidity, salinity and temperature), direct loss of habitats, effect of outfall diffuser/intake pipe environment on marine environment, emissions to air; cumulative effects with other activities in Kilkieran Bay (e.g. fish farming).					
		Appropriate Assessment			
Qualifying Interest	**Conservation Objectives Targets and Attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
1140 Mudflats and sandflats not covered by seawater at low tide	To maintain favourable conservation condition, defined by habitat area (currently stable/increasing) and community distribution.	No mudflats or sandflats in vicinity of PnM site or intake/outfall pipe (NPWS data and site survey). No impact on seawater levels.	Mitigation measures for water and air pollution apply.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes.
1150 Coastal lagoons.	To maintain the favourable conservation condition, as defined by habitat area, distribution, saline regime, hydrological regime, barriers,	No coastal lagoons in vicinity of PnM site or intake/outfall pipe (NPWS data and site survey).	Mitigation measures for water and air pollution apply.	No other works proposed in Kilkieran Bay.	Yes.

	water quality, depth of macrophyte colonisation, typical plant and animal species and negative indicator species.	No significant impacts on water quality, salinity or hydrological regime (see below).		No potential for in-combination effects (see discussion).	
1160 Large shallow inlets and bays	To maintain favourable conservation condition of this habitat type, with reference to three sub-groups, *Zostera*- and maërl- dominated communities and *Pachycerianthus multiplicatus*-dominated community. Targets include to maintain the extent and high quality of these communities and to conserve the following communities in a natural condition; Intertidal sand with polychaetes community complex; Mixed sediment dominated by polychaetes community complex; Sand with nemerteans and crustaceans community complex; Deep water sand dominated by bivalves and polychaetes community complex; Reef communities (as listed under 1170).	Intake and outfall pipes located in shallow inlets and bay habitat. Potential for loss/fragmentation of/damage to habitat and potential impacts on water quality with operation. Site survey of habitats at break out sites (intake and outfall pipe) identified intertidal bedrock covered in fine silt colonised by brown and red algae and muddy sand with occasional *Lithothamnium* on the surface. *Pachycerianthus multiplicatus*- does not occur in this part of SAC.	Directional drilling and location of breakout areas avoids the sub-groups of Large shallow inlets and bays and loss of *Zostera*- and maërl-communities and other communities referred to. Conclusion drawn based on dive surveys (Figure 5-2 to 5-4, AA Report). Adult benthic fauna do not vary from season to season. Navigational aid to be anchored separately to	No other geophysical works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.

	Status of habitat in Ireland: Bad[7]. Pressures = nutrient enrichment, dredging and invasive alien species.		intake/ outfall structures (Drawings 2490-P-SEW-003 and -012). Mitigation measures include detailed construction methodology (CEMP), and management of surface waters and potential contaminants on site during operation. Dispersion modelling indicates absence of effects on water quality. Very modest land take. Temporary		

[7] Status of EU Protected Habitats and Species In Ireland, NPWS, 2019.

			disturbance 8m^{2,} permanent loss of sea bed = 0.66m^2 or c.0.00000033% of total marine seabed covered by SAC. Mitigation measures for air pollution apply.		
1170 Reefs	To maintain the favourable conservation condition of Reefs, defined by habitat area, distribution and community structure. Status of habitat in Ireland: Inadequate. Pressures = fishing methods that damage the sea floor.	Reefs border PnM site and are located within the footprint of the intake and outfall pipes.	All Reefs will be avoided by directional drilling. Mitigation measures for water and air pollution apply.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.
1330 Atlantic salt meadows	To restore the favourable conservation condition, defined by habitat area, habitat distribution, physical structure (sediment supply, creek and pan structure, tidal regime) and vegetation structure.	Area of Atlantic salt meadows identified in top of littoral zone of PnM site. Potential Atlantic salt meadows mapped downstream of watercourse that passes	No works proposed in area of Atlantic salt meadows. Pollution control measures prevent	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	See discussion.

	Status of habitat in Ireland: Inadequate. Pressures = agriculture and invasive species.	through PnM and downstream of Lough Skannive outlet to Kilkieran Bay.	pollution of littoral zone. Mitigation measures for air pollution apply		
1410 Mediterranean salt meadows	To restore to favourable conservation condition, defined by habitat area, habitat distribution, physical structure (including circulation of sediments, creek and pan structure, tidal regime) and vegetation structure. Status of habitat in Ireland: Inadequate. Pressures = agriculture.	Potential Atlantic salt meadows mapped downstream of watercourse that passes through PnM and downstream of Lough Skannive to Kilkieran Bay.	No works proposed in area of Atlantic salt meadows. Pollution control measures prevent pollution of littoral zone. Mitigation measures for air pollution apply	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.
21A0 Machairs (*in Ireland)	To restore the favourable conservation condition, defined by habitat area, distribution, physical structure, vegetation structure and vegetation composition. Status of habitat in Ireland: Inadequate. Pressures = unsuitable grazing regimes and disturbance.	No habitat present in vicinity of site. Nearest occurs on islands within the Bay to the south of the site.	Mitigation measures in respect of water and air pollution apply.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes.

6510 Lowland hay meadows	To maintain the favourable conservation condition, defined by habitat area, habitat distribution, vegetation structure, vegetation composition and bare soil. Status of habitat in Ireland: Bad. Pressures = agricultural practices and losses of habitat.	No habitat present in vicinity of site. Nearest occurs on islands within the Bay to the south of the site.	Mitigation measures in respect of water and air pollution apply.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes.
1355 Otter	To restore the favourable conservation condition, defined by distribution, extent of terrestrial habitat, marine habitat, freshwater habitat (river and lake), couching sites and holts, fish biomass available and barriers to connectivity). Status of habitat in Ireland: Favourable. Threats = pollution (especially organic pollution resulting in fish kills) and accidental deaths (road traffic and fishing gear).	Otter marine aquatic habitat and commuting corridor along PnM boundary with Kilkieran Bay. Site survey concluded Otter likely to be present in marine and aquatic areas and to use all rivers/streams in and near the study area as a freshwater source. No signs of Otter in site visit. No potential holts in footprint of works.	Hours of construction to be limited to standard daytime hours. Mitigation measures to control pollution events during construction and operation.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.

		Potential for short term disturbance to Otter.			
1365 Harbour seal	To maintain the favourable conservation condition, defined by access to suitable habitat, breeding behaviour, moulting behaviour, resting behaviour and disturbance. Status of habitat in Ireland: Favourable. Pressures = commercial vessel-based activities such as prey removal by fisheries or by-catch in fisheries or geophysical seismic exploration, coastal tourism and localised disturbance at haul out sites (locations where seals come ashore to rest, moult or breed).	Bay is used by Harbour Seal. No breeding, moulting or resting sites in the immediate vicinity of PnM. Breeding and resting sites south of outlet from Lough Skannive to Kilkieran Bay.	Mitigation measures to control pollution events during construction and operation.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.
1833 Slender Naiad	To maintain favourable conservation condition, defined by population extent, depth, viability and abundance, species distribution, habitat extent, hydrological regime, lake substratum quality, water quality, acidification status, water colour and associated species.	Not present in vicinity of PnM site or lakes affected by the development.	Mitigation measures in respect of water and air pollution apply.	No other works proposed in Kilkieran Bay. No potential for in-combination effects (see discussion).	Yes - See discussion.

	Status of habitat in Ireland: Inadequate. Pressures = eutrophication, acidification and peatland damage.				

Overall conclusion: Integrity test

Following the implementation of mitigation, the construction and operation of the proposed development will not adversely affect the integrity of this European site and no reasonable doubt remains as the absence of such effects.

Table 3 - Connemara Bog Complex SAC

Connemara Bog Complex SAC, site code 002034. Potential for adverse effects – Construction – Water pollution (increased runoff, accidental spills cement, hydrocarbons), noise and disturbance and direct loss of habitats within lakeside environment and adjoining SAC. Operation – Change in hydrological regime with impacts on habitats and species associated with European site, deterioration in water quality (surface water runoff). Cumulative effects - With abstraction from catchment by Irish Water.					
		Appropriate Assessment			
Qualifying Interest	**Conservation Objectives Targets and Attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Coastal lagoons [1150]	To maintain favourable conservation condition, defined by habitat area, habitat distribution, salinity regime, hydrological regime, connectivity between sea and lagoon, water quality, depth of macrophyte colonisation, typical plant and animal species and presence of negative indicator species.	Nearest coastal lagoon is c.2.5km to the north east of the PnM site. No hydrological links to this (or other coastal lagoon habitats). Potential for air pollution.	Mitigation measures for air pollution apply.	No other works proposed.	Yes – see discussion.

Reefs [1170]	To maintain favourable conservation condition, defined by habitat area, distribution, community extent and community structure.	Reefs in the SAC are located in Bertraghboy Bay, c.7km to the north west of the site and substantially removed from PnM development, abstraction works and pipeline. Lough Skannive discharges into the Atlantic and the development (via the intake works) are therefore hydrologically connected to same water body. However, with distances and volume of water involved hydrological connectivity unlikely to result in any adverse effect.	Mitigation measures in respect of air pollution apply.	No other works proposed.	Yes
Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	To maintain favourable conservation condition defined by habitat area, habitat distribution, typical species, vegetation composition, vegetation distribution, hydrological regime, lake substratum quality, water quality, acidification status, water colour, DOC, turbidity and fringing habitat.	Site surveys identified macrophyte communities throughout Lough Skannive and Sheedagh that were representative of habitat. Not identified in abstraction area, closest c.50m from works. Lough Skannive forms boundary with SAC along	N/A - [3110] habitat lies upstream of Lough Skannive and bog restoration site.	No other proposed works.	Yes – See discussion.

	(Article 17 Report, overall status Bad).	northern shore and (with Lough Sheedagh) share hydrological connectivity with the SAC (rivers in SAC discharge to Lough Skannive and from here to the Atlantic via Dooletter River East) All potential 3110 lake habitats in SAC are upstream of Lough Skannive and Lough Sheedagh. Lough Bhéal na Comhlann mapped as supporting this QI, lies upstream of peat restoration works.			
Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	To maintain the favourable conservation condition defined by habitat area, habitat distribution, typical species, vegetation composition, vegetation distribution, hydrological regime, lake substratum quality, water quality, acidification status, water colour, DOC, turbidity and fringing habitat.	Lough Skannive and Lough Sheedagh share connectivity with this SAC (northern shore Lough Skannive). No macrophyte communities representative of this habitat recorded in Lough Skannive or Lough Sheedagh, within the	N/A	N/A	Yes.

		zone of influence of the water abstraction. Any potential changes to lake will not affect the ecology of the habitat. Lough Bhéal na Comhlann mapped as supporting this QI, lies upstream of peat restoration works.			
Natural dystrophic lakes and ponds [3160]	To maintain favourable conservation condition defined by habitat area, habitat, distribution, typical species, vegetation composition, vegetation distribution, hydrological regime, lake substratum quality, water quality, acidification status, water colour, DOC, turbidity and fringing habitat.	Lough Skannive and Lough Sheedagh share connectivity with SAC (northern shore of Lough Skannive) but are not representative of acidic lake habitat. Four small dystrophic lakes mapped by NPWS within peatland restoration area. Lakes have been drained in preparation for peat extraction.	A total of 16.3ha of blanket bogs [7130], wet heath [4010] and natural dystrophic lakes [3160] will be restored within the SAC outside of the study area. (Carried out to offset removal of undesignated blanket bog and heath from PnM site).	N/A	Yes.
Water courses of plain to montane levels with the	To maintain favourable conservation condition defined by habitat area,	Selection of this SAC for 3260 used a broad interpretation	Detailed mitigation measures to	No other works proposed.	Yes - See discussion.

Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	distribution, hydrological regime, substratum composition, water quality, vegetation composition, floodplain connectivity and riparian habitat. (Article 17 Report, overall status Inadequate).	and little known of distribution of habitat. Rivers and streams are widespread and abundant in the SAC. No rivers in SAC downstream of any work sites related to development. No floating vegetation habitat present in riverine watercourses in zone of influence of the peatland restoration area. Potential for habitat in Owenriff River catchment, downstream of peatland restoration area.	minimise release of sediments and other construction related pollutants to water to Owenriff River. With bog restoration works have potential to improve water quality in downstream water bodies and potential for habitat.		
Northern Atlantic wet heaths with Erica tetralix [4010]	To restore favourable conservation condition defined by habitat area, distribution, ecosystem function, community diversity, vegetation composition, vegetation structure, physical structure and indicators of local distinctiveness.	Wet heath [4010] present along northern shore of Lough Skannive (within SAC) corresponds to this qualifying interest. Changes to lake levels could impact on adjoining habitat. Wet heath habitat [4010] present in mosaic with blanket	Strict management of water levels in Lough Skannive. A total of 16.3ha of blanket bogs [7130], wet heath [4010] and natural dystrophic lakes [3160] will be restored within the SAC outside of the	Abstraction by Irish Water.	No - See discussion.

		bog in peatland restoration area.	study area. (Carried out to offset removal of undesignated blanket bog and heath from PnM site).		
European dry heaths [4030]	To restore favourable conservation condition defined by habitat area, distribution, community diversity, vegetation composition, vegetation structure and indicators of local distinctiveness. (Article 17 Report, overall status Bad).	Habitat map indicates presence of this habitat [4030] in locations around Lough Skannive and Lough Sheedagh especially on islands and rocky headlands, and within PnM site. Changes to lake levels could impact on adjoining habitat. No habitat [4030] identified in SAC on northern shores of Lough Skannive or peatland restoration area.	N/A - No 4030 habitat in adjoining SAC or peatland restoration area.	N/A	Yes
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	To maintain favourable condition defined by habitat area, distribution, vegetation composition, vegetation structure and physical structure.	Not present in study area (dependent on grazing management an calcareous groundwater).	N/A	N/A	Yes.

Blanket bogs (* if active bog) [7130]	To restore favourable conservation condition defined by habitat area, distribution, ecosystem function, community diversity, vegetation composition, vegetation structure, physical structure, indicators of local distinctiveness. (Article 17 Report, overall status Bad).	Habitat [7130] found on shores of Loughaunore and Lough Ierin and dominates the lands around Lough Skannive and Lough Sheedagh. Also present in PnM site and in peatland restoration area. Changes to hydrological regime in Lough Skannive has potential to impact on adjoining habitat. Restoration of habitat is an objective of the peatland restoration plan.	Strict management of water levels in Lough Skannive. A total of 16.3ha of blanket bogs [7130], wet heath [4010] and natural dystrophic lakes [3160] will be restored within the SAC outside of the study area. (Carried out to offset removal of undesignated blanket bog and heath from PnM site).	Abstraction by Irish Water.	No - See discussion.
Transition mires and quaking bogs [7140]	To restore favourable conservation condition defined by habitat area, distribution, ecosystem function, community diversity, vegetation composition, vegetation structure, physical structure and indicators of local distinctiveness.	Small area of habitat [7140] identified on northern shores of Lough Skannive, outside of SAC boundary (eastern side of Letterpibrum River). Changes to lake levels could impact on adjoining habitat.	N/A - No 7140 habitat in adjoining SAC or peatland restoration area.	N/A	Yes

Depressions on peat substrates of the Rhynchosporion [7150]	To restore favourable condition defined by habitat area, ecosystem function, vegetation composition, vegetation structure, physical structure and indicators of local distinctiveness. (Article 17 Report, overall status Bad).	Habitat present in SAC along northern shore of Lough Skannive and in peatland restoration area (associated with hollows in blanket bog and cutover bog). Changes in hydrological regime of Lough Skannive may impact on adjoining habitat.	Strict management of water levels in Lough Skannive.	Abstraction by Irish Water.	No - See discussion.
Alkaline fens [7230]	To restore favourable condition defined by habitat area, ecosystem function, community diversity, vegetation composition, vegetation structure, physical structure and indicators of local distinctiveness.	No habitats found in study area (dependent on calcareous groundwater inputs).	N/A	N/A	Yes.
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To maintain favourable condition defined by habitat area, distribution, woodland size, woodland structure, vegetation composition.	No habitat found in zone of influence of the development.	N/A	N/A	Yes.
Euphydryas aurinia (Marsh Fritillary) [1065]	To maintain favourable condition defined by distribution (occupied 1km squares), proof of breeding (larval webs) and potential habitat area (areas of vegetation where devil's-bit	No suitable habitat for 1065 along northern shore of Lough Skannive or peatland restoration area.	N/A - No suitable habitat for 1065 in adjoining SAC or peatland restoration area.	N/A	Yes.

	scabious is present, with mean height less than 50cm with less than 10% cover of scrub more than 1m tall). (Article 17 Report, overall status Inadequate).	[2019 survey identified wet heath habitat on southern shore, where intake works proposed, with an abundance of devil's-bit scabious. Detailed survey found no larval webs. 2021 survey found two pockets of devil's-bit scabious, one in proximity to pumping station on disturbed ground with no suitable Marsh Fritillary habitat, and the other outside of works area. See EIA].			
Salmo salar (Salmon) [1106]	To restore favourable conservation condition defined by distribution, adult spawning fish, salmon fry abundance, out-migrating smolt abundance, number and distribution of redds (depression created by female salmon) and water quality. (Article 17 Report, overall status Inadequate).	Rivers in SAC flow into Lough Skannive (including Letterpibrum River that runs along the eastern boundary of the SAC north of Lough Skannive). During flood conditions water levels in Lough Skannive can back up the river channel (Letterpibrum) towards Coolanigra Lough.	Detailed mitigation measures to minimise release of sediments and other construction related pollutants to water. Strict management of water levels in Lough Skannive. No instream works in Owenriff River.	Abstraction by Irish Water.	Yes - See discussion.

		Lough Skannive may represent migratory pathway for salmon upstream of lake. Changes in hydrology may impact on migration. Letterpibrum River lies in peatland and considered unsuitable for salmonids (heavily silted & modified). Atlantic salmon parr (young salmon) recorded in Dooletter East River (where Lough Skannive outfalls into Mweenish Bay). Peatland restoration area bound to north and east by Owenriff River (part of SAC). Potential for Owenriff River to support salmon.	Restoration works will reduce peat siltation and improve water quality.		
Lutra lutra (Otter) [1355]	To maintain favourable conservation condition defined by distribution, extent of terrestrial, marine and freshwater (lake and river) habitat,	Otters likely to use Lough Skannive (adjoins SAC) and Owenriff River (adjoining peatland restoration area).	Detailed mitigation measures to minimise release of sediments and other	IW abstraction.	Yes – See discussion.

	couching sites and holts and fish biomass available.	No holts or resting placed identified near works. Possible prints in mud along shore connecting Lough Skannive and Lough Sheedagh. Impact on Lough Skannive or Owenriff River as a source of prey for otters may have an indirect impact on otter populations in SAC.	construction related pollutants to water. Small seasonal drops in water levels will not affect extent of lake or river habitats, biomass or distribution of Otter. Peatland restoration works may improve distribution in Owenriff River.		
Najas flexilis (Slender Naiad) [1833]	To maintain favourable conservation condition defined by population extent, depth, viability, abundance, distribution, habitat extent, hydrological regime, lake substratum quality, acidification status, water colour, associated species and fringing habitat.	Not present in Lough Skannive catchment lakes. Loch Bhéal na Comhlann upstream of peatland restoration area significantly affected by siltation.	N/A	N/A	Yes.
Overall conclusion: Integrity test					

Having regard to the absence of assessment of the effects of climate change on Lough Skannive catchment, I am not satisfied that the proposed development will not adversely affect the integrity of this European site and reasonable doubt remains as the absence of such effects.

Table 4 - Connemara Bog Complex SPA

Connemara Bog Complex SPA, site code 004181. Potential for adverse effects – Construction – water pollution (increased runoff, accidental spills cement, hydrocarbons) and adverse effect on habitat/species associated with European site (abstraction works and peat restoration area).					
		Appropriate Assessment			
Qualifying Interest	**Conservation Objectives Targets and Attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
A017 Cormorant	To maintain or restore the favourable conservation condition of the bird species	Breeding pairs occur in Lough Skannive and Loch Bhéal na Comhlann near peatland restoration area. Potential for disturbance at peatland restoration area.	Peatland restoration area currently used for turbary and therefore occasional high level of disturbance by heavy machinery. SCI species that regularly breed or forage near the area will be acclimatised to disturbance. Limited duration of drain blocking, face bank reprofiling etc. requiring	No other projects.	Yes - See discussion.

			heavy machinery will not exceed 1-2 months. Minimal disturbance thereafter.		
A098 Merlin	To maintain or restore the favourable conservation condition of the bird species	Occurs widely across SPA. Potential for disturbance at peatland restoration area.	As above.	No other projects.	Yes - See discussion.
A140 Golden Plover	To maintain or restore the favourable conservation condition of the bird species	Occurs widely across SPA. Potential for disturbance at peatland restoration area.	As above.	No other projects.	Yes - See discussion.
A182 Common Gull	To maintain or restore the favourable conservation condition of the bird species	Occurs widely across SPA. Potential for disturbance at peatland restoration area.	As above.	No other projects.	Yes - See discussion.

Overall conclusion: Integrity test

Following the implementation of mitigation, the construction and operation of the proposed development will not adversely affect the integrity of this European site and no reasonable doubt remains as the absence of such effects.

7.7.31. **Discussion.**

7.7.32. **Impact on Kilkieran Bay and Islands SAC. Qualifying Interests.** The key issue for this assessment is whether or not the proposed development will adversely affect the integrity of the SAC by reference to the sites qualifying interests and associated conservation objectives. I note the comments by the Department which state that particular attention should be paid to the targets and notes related to the marine Annex I habitats which require the feature to be stable or increasing in habitat or community area.

7.7.33. Having regard to the nature of the development and its location relative to the qualifying interests of the SAC there is potential for effects on the following (see Table 2):

Large shallow inlets and bays [1160]

7.7.34. Direct effects by way of land take (construction and operation) arise only in respect of Large shallow inlets and bays. The proposed development will result in the temporary disturbance and long term loss of a very modest area of seabed (8m^2 and 0.66m^2 respectively, from a total SAC area of 18,760ha). Having regard to the survey work carried out and proposed diver control of punch out locations, I am also satisfied that Annex I habitat sub-types will be avoided in the location of intake and outfall pipes.

7.7.35. Notwithstanding this, parties to the appeal and planning application, including DAU, raise concerns that the *de minimus* loss of permanent habitat conflicts with the target that the permanent habitat area is stable or increasing.

7.7.36. The EPAs 2019 Article 17 report, on the Status of EU Protected Habitats and Species in Ireland, states that the overall status of the [1160] habitat is 'Bad' and deteriorating with a genuine decline since 2013 assessment of 'Inadequate and Improving' based on more detailed information (i.e. trend is declining habitat). Kilkieran Bay and Islands SAC was assessed as Unfavourable-Inadequate. The main reason cited for the national decline in status of the habitat is loss eelgrass beds (Zostera *marina* in particular). However, Kilkieran Bay and Islands SAC is not identified as a location in which this has occurred.

7.7.37. Main pressures and threats at a national level are residential and recreation activities, agricultural activities, forestry activities causing marine, surface of groundwater pollution, marine fish and shellfish harvesting causing reduction/disturbance in species/prey populations, marine aquaculture generating marine pollution and invasive species. Conservation measures include reduction/elimination of pollution, benthic dredging and addressing invasive species.

7.7.38. The proposed sea water intake and wastewater outfall pipes will be installed by directional drilling, from the launch pit, to 'punch out' locations at the intake/outfall points. Construction works will give rise to a temporary disturbance of $8m^2$ of seabed and operation, permanent loss 0.66m2 or c.0.00000033% of total marine seabed covered by SAC. It is evident from the details submitted that the subject development would result in an extremely modest land take from the overall area of the SAC. Further, from the scientific information presented, based on survey work of the sea bed in the area of the intake and outfall pipes, specific communities which are identified as targets to maintain the favourable conservation condition of the habitat are avoided i.e. the 2021 underground water survey confirmed that there were no community complexes associated with the Large shallow inlets and bays habitat within $5m^2$ of the proposed intake and outfall locations (Figure 5-2, NIS). Punch out locations will be guided on site by dive teams and will again avoid these habitats. There is no scientific information on file or arguments by any party that the loss species in the community complex in the area of the intake and outfall locations during construction ($8m^2$) or operation ($0.66m^2$) will alter the structure and function of the community complex. Further, it is stated by the applicant, based on dive survey data, that these communities are abundant in proximity to the punch out locations and the wider area. I am satisfied therefore that whilst land take occurs (temporary and permanent), land take is extremely modest and loss of supporting habitats does not threaten the integrity of this qualifying interest of the European site. In this regard, the NPWS Report, 'Conservation objectives supporting document – marine habitats and species' (2014) on the habitat (a) acknowledges the dynamic sedimentary environment of the Bay and (b) in respect of disturbance to each community type (that contributes to the Annex I marine habitat) and states that any such disturbance should not exceed an area of 15%, after which any licensing of activities would require an increasingly cautious approach.

7.7.39. I consider therefore that the development is not comparable to Sweetman v An Bord Pleanála, Case C-258/11 i.e. the project will not lead to the lasting or irreparable loss of the whole or part of a priority habitat. The imperceptible ecological significance of the loss of this extent of habitat within the SAC is acknowledged by the NPWS in their meeting with the applicant on the 26th April 2019 (Appendix H, EIAR).

7.7.40. With regard to water quality, it is evident that loss of water quality threatens this qualifying interest. The CEMP sets out details in respect of construction methodology to avoid contamination of waters (including construction of retaining wall near shoreline with pre-cast structures, to be located in Catchment C of the proposed surface water management system – section 9.4.2.2 CEMP) and prevent dust and sediment laden runoff and accidental spills during construction. The CEMP includes specific measures to minimise sediment and drilling muds at the break out points and provides an environmental emergency response plan for unplanned incidents (section 5.13.8 to 5.13.14). The measures referred to include standard good practice at construction sites and very specific measures given the location of the proposed development adjoining and within the European site. The NIS and NPWS also refer to the tidal movements and velocities in Kilkieran Bay which rapidly disperse fines.

7.7.41. With operation, the applicant intends a high quality of marine effluent. In this regard the Hydrodynamic dispersion modelling (Appendix D of AA report) indicates that the effluent discharge at the outfall location will meet all Environmental Quality Standards for coastal and transitional water bodies (subject to disinfection of domestic waste water) with no effect on existing Class B Bivalve Mollusc production status of the Bay, shellfish production status and bathing water standards at Blue Flag beaches. It also demonstrates how intake is unlikely to be affected by outfall. The report concludes that residual risk from the proposed outfall discharge on the ecology of the water column and seabed will be negligible.

7.7.42. The applicant includes an Invasive Species Management Plan in Appendix 1 of the Construction Management Plan. This provides a comprehensive approach to the management of invasive species across the site. It is notable that the invasive species identified as of concern in the Article 17 report, *Sargassum muticum*, is not identified in the underwater survey of the site.

7.7.43. The proposed waste outfall will be licenced by the EPA, however, I am satisfied that sufficient scientific evidence has been submitted to demonstrate that effluent from the proposed development will not have an adverse effect on the ecology of the European site, subject to the implementation of all mitigation measures and operational standards. Impact assessment has been carried out on the basis of existing developments and therefore assesses cumulative effects. (In-combination effects are discussed below).

Reefs [1170]

7.7.44. Location of Reefs is shown in Figure 5-1 of the NIS. They clearly occur within the footprint of the intake and outfall pipes but will be avoided by controlled directional drilling (compare Figure 5-1 and 5-2). I am satisfied therefore that no direct effects on this qualifying interest will arise. Indirect effects by way of impacts on water quality are discussed above and are unlikely.

Atlantic salt meadows [1330]

7.7.45. An area of Atlantic salt meadows is identified in top of littoral zone of PnM site (section 3.3.3 NIS). Potential Atlantic salt meadows are mapped by NPWS downstream of watercourse that passes through PnM and downstream of Lough Skannive outlet to Kilkieran Bay. Again, no works are proposed in the area of salt marsh. Atlantic salt marshes, downstream of and adjoining the site, will not be directly affected by the development as they are removed from the works footprint (compare Figure 10 Habitat Map and drawings 2490-SEW-001 to 012 Rev B) and for the reasons stated above, indirect effects are unlikely due to proposed construction practices, mitigation measures, high quality effluent and modelled dispersion effects. Notably dissolved inorganic nitrogen loading, which can give rise to eutrophication and change of species composition in salt marsh, will be below Environmental Quality standards for High Status waters (see Appendix D of AA report).

Mediterranean salt meadows [1410]

7.7.46. Potential Mediterranean salt meadows are mapped by NPWS downstream of watercourse that passes through PnM and downstream of Lough Skannive outlet to Kilkieran Bay. Again, no works are proposed in the area of salt marsh and indirect effects by way of impacts on water quality are discussed above and are unlikely.

Otter [1355]

7.7.47. Otter species are identified as using the sea side boundary of the PnM site as aquatic habitat and for commuting. The applicant's survey of the appeal site and surrounding area for Otter found no holting or couch sites, prints or spraints but considered that the site did form part of the area used by Otter for foraging. As otters are typically active in the early morning and evening, significant impacts during construction are predicted as unlikely and temporary avoidance of the area during this phase of the development. This conclusion is not unreasonable. Further, given the absence of likely effects on extent of terrestrial habitat, marine habitat, crouching sites and fish biomass availability (attributes), overall effects on Otter during construction are unlikely to be significant. During operation, the species is predicted to habituate to increased levels of noise and be unaffected by the predicted levels of effluent. This conclusion seems reasonable in the context of Otter's use of the site, likely habituation to human activity already in the area of the site, low concentration of pollutants predicted and the modelled dispersion and dilution effects (and therefore absence of effects on prey).

Harbour seal [1365].

7.7.48. Whilst there is potential for impacts on Harbour Seal which occur in Kilkieran Bay:

- No resting, moulting pr breeding sites are identified in NPWS data or from site survey in the vicinity of the site (see Figure 5-5 NIS),
- Predicted noise levels are below those likely to cause temporary or permanent effects (see below), and
- Construction of intake and outfall pipes will occur in the shallow areas of the bay where seals are unlikely to occur.

7.7.49. Having regard to the foregoing, the NIS concludes that impacts of construction are, at worst, likely to be confined to temporary avoidance of the area. This conclusion seems reasonable. Impact of noise from cleaning of the screen intake is considered below and is also unlikely to give rise to significant effect on Harbour Seal.

Noise and Vibration

7.7.50. The potential effects of underwater noise and vibration, arising from drilling, are considered in section 5.1.1.2.1.4 and Appendix E of the AA report (Underwater

Noise Assessment Report). It has regard to the noise and vibration levels arising from drilling equipment, screen cleaning and rock breaking on the PnM site and potential effects on Otter, Harbour seal, Common and Bottlenose dolphin, Atlantic salmon, European eel, Sea Lamprey and marine invertebrates (no auditory appendages but which move away or retract into shells). It concludes that no significant noise effects will arise as a consequence of construction or operation (screen cleaning system), subject to mitigation (marine mammal observer and soft start procedures where necessary) and in the context of large background noise (from high tidal velocities). No cumulative effects predicted due to absence of similar works in same period.

7.7.51. The conclusions drawn are based on the depth of water in which the works take place (and therefore species present and likelihood of sound propagation), Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014) and current best practices thresholds for the protection of marine mammals and fish species. It adopts a worst case scenario approach e.g. where surface and bottom intensity reflection coefficients are set at full reflection (despite ground conditions indicating less reflection).

7.7.52. The report acknowledges that there is little data on underwater noise levels from horizontal directional drilling (HDD), but refers to monitoring of an HDD operation in the River Foyle (pilot hole 100mm diameter, reaming operation 600mm diameter). It states that there was a noticeable change in noise levels with reaming (cutting tool), with noise levels arising of 102 dB re 1 μPa^2s SEL or 120 dB re 1µPa Peak, a noise level which is below that likely to trigger effects in marine mammals or fish species (see Table 2-1 and 2-2, AA/NIS). The report acknowledges that there is no published data for rock breaking under water and instead uses data for pile driving, which is similar in character to rock breaking, but likely to over-estimate noise levels. It refers to South Australian Underwater Piling Noise Guidelines to describe the likely range of piling noise levels (typical source levels range from SEL 170-225 dB re 1 μPa^2 s for a single pulse and peak level 190-245 re 1µPa, with most sound energy at lower frequencies between 100Hz and 1kHz). The report describes the screen cleaning exercise as a blast of compressed air through the intake screens over a period of several seconds. It compares the noise generated to that arising from cavitation bubbles crated by a large vessel propeller with a maximum noise level of

155 re 1µPa Peak in the frequency range 10Hz to 30Hz. This is again below levels likely to affect marine mammals and fish species (except Harbour Porpoise which is unlikely to occur in the shallow waters of the Bay).

7.7.53. Predicted noise levels for HDD, rock breaking, and screen cleaning are indicated in section 5 of the report. Noise from HDD drilling, in a worst case scenario, is predicted to be below Permanent Threshold Shift for fish and very high frequency cetaceans, with no foreseeable risk of hearing damage to either fish or marine mammals. Predicted noise from rock breaking, which as stated above is also based on a likely higher noise model, is below the Peak threshold for PTS onset for fish and marine mammals. SEL thresholds are not exceeded for fish but could be exceeded for very high frequency cetaceans (Harbour Porpoise) up to a range of 5m from source. However, the NIS states that it is highly unlikely that a Harbour Porpoise would approach a rock breaker at this range. The NIS acknowledges that the estimate for screen cleaning noise, 155 dB re 1µPa^{2}s, immediately adjacent to the operation of the screen is a conservative estimate and unlikely to arise in practice. However, it states that it is at the threshold for very high frequency cetaceans and as it will be carried out intermittently and last only for a few seconds, the risk of damage to marine mammal is therefore extremely unlikely. Mitigation measures are proposed as per the Department's Guidelines (DAHG, 2014) and include attendance of a marine mammal observer and soft start procedures where peak sound pressure levels exceed 170 dB re 1µPa @1m. Due to limited uncertainty on noise levels which may arise from HDD operations close to the seabed and screen cleaning operations, the report recommends underwater noise monitoring during construction to ensure that predicted noise levels are validated.

7.7.54. In making the appeal, the appellant states that underwater noise and vibration are directly related, with low noise giving rise to low levels of vibration. This is not unreasonable as sound is a wave created by vibrations and needs a medium such as air or water to travel through. The appellant states that in the context of the proposed works vibration levels are negligible and will not affect the site's conservation objectives. Whilst the applicant's conclusions may be reasonable, there is limited detail demonstrating the conclusion reached.

7.7.55. Having regard to the thresholds for effects on marine mammals and fish, the available research of likely effects of noise, Department guidelines and conservative

approach taken to assessment, I am satisfied on the basis of the scientific evidence presented that the proposed development by way of noise or vibration is unlikely to have a significant effect on the conservation interests of the SAC (notably Otter and Harbour Seal) as a consequence of noise arising from construction and operation. Any decision to grant permission for the development should require implementation of mitigation and monitoring, to ensure compliance with predicted noise limits and to add to research in the field.

Air pollution

7.7.56. Chapter 10 of the EIAR, repeated in Appendix J of the NIS, considers the likely effects of air pollution on European sites. This issue is discussed in the EIA section of this report. In summary, predicted effects on nitrogen and ammonia deposition are within the limit values to affect ecological sites and identified qualifying interests of European sites.

7.7.57. **Mitigation**. The applicant proposes a comprehensive suite of mitigation measures. These are summarised in sections 6.1 and 6.2 of the NIS and are referred to, as necessary, in my assessment. The CEMP sets out responsibilities of the different parties involved in construction, including roles of contractor, construction manager, site manager, construction environmental manager, ecological clerk of works etc. The proposed development takes place, in part, within a European site. The absence of significant effects on the conservation objectives of the site are predicated on the full and detailed implementation of proposed measures to prevent loss and deterioration of qualifying interests. Any decision by the Board to grant permission for the development should include provision of a single document drawing together all of the measures set out across the project documentation, with measures assigned to individual project management roles and specific arrangements for oversight by the planning authority during construction works.

7.7.58. **In-combination effects**

- Plans and projects. Section 5.4.1 of the AA report identifies cumulative impacts arising from the development in conjunction with the policies of the County Development Plan, planned development in the area and existing developments. Cumulative effects with policies of the Development Plan are excluded on the basis of mitigation measures in the Development Plan which

at project level include regard for natural heritage when considering economic and tourism development and an integrated approach to development in the marine environment ensuring that ecological limits are respected.

- Similar operations. The NIS refers to a seaweed processing plant Arramara Teo) and a fish processing site Cil Chiarain Eisc Teo), both located at Kilkieran. The applicant states that these are classed as similar operations to the proposed development, the works at PnM do not act in conjunction with any existing development. No explanation is given regarding how the existing businesses differ from the subject development or therefore how in-combination effects do not arise. However, as the assessment is based on existing background levels, it can be reasonably assumed that the effects of existing development are included.
- Quarrying with potential for cumulative dust impacts during construction. With the application of best practice mitigation measures, no significant effects on the SAC are anticipated. This conclusion is not unreasonable give the distance of quarrying from the subject site.
- Freshwater supply for nearby off shore salmon farms to control lice growth. The EIAR states that this water supply is not from Lough Skannive, with consequently an absence of significant effect. Ideally the source of this supply should be identified.
- Existing aquaculture activities and fisheries. Section 5.4.2 deals with cumulative effects arising from the subject development (discharge of treated waste water) and existing fish farming activities in the Bay. It acknowledges the potential for cumulative nitrogen and phosphorus and the potential for eutrophication with negative effects on the qualifying interests and conservation objectives of the Kilkieran Bay and Islands SAC. However, it states that due to the strong current velocities and high levels of turbulence in Kilkieran Bay, the nutrients released by farmed fish are quickly diluted and dispersed away from these farms. The applicant refers to the cites evidence from (a) the Marine Institute (O'Donohoe et al, 2000) which identified over a period of 15 years water quality data from 11 sites in Kilkieran Bay where

intensive salmon farming had been on-going since 1984 no significant impacts on water quality, (b) evidence of increase in the distribution of *Zosetera* in western regions than previously documented, including in Kilkieran Bay (Beca-Carretero, 2020) and (c) other studies in Norway, USA and Scotland which all reported undetectable increases in dissolved nitrate from marine salmon farms (section 3.3.4.2 NIS). The NIS also states that scallop dredging is at a much lower level than salmon farming in the Bay and any sediment generated will also be diluted and dispersed by the physical oceanographic conditions.

WFD Data for the Waterbody (Kilkieran Bay) indicates that the waterbody has Good ecological status and is Not at Risk of failing to meet good status by 2027. However, ecological status in the bay was high for the period 2020-2015 (with decline in invertebrate status influencing overall status between monitoring programmes – see attachments).

Notwithstanding the foregoing, having regard to all of the evidence presented, the absence of any scientific evidence put forward to contradict the conclusions drawn and the proposed effluent standards to be achieved at PnM, I am satisfied that the proposed development would not give rise to eutrophication or water pollution in Kilkieran Bay as a consequence of cumulative effects with existing salmon farms and other marine activities.

- Seaweed harvesting. In section 5.4.3 the applicant states that, c.25-30% of the projected demand for seaweed would come from Kilkieran Bay, with a 5 year cycle between cuts to allow the biomass to recover. This is stated to be a conservative approach with research indicating c.17months recovery time (Kelly *et al*, 2001). However, I note that the research paper cited (Guiry, Appendix I) refers to a traditional 4 year recovery window.

  The AA reports states that seaweed will be harvested by hand, using traditional methodology, which has been found to be more effective and cost-efficient than mechanical harvesting, with no long term effects on biodiversity and no species lost from any of the harvested sites and no effects on other species (page 139 AA report, Scottish government report and Kelly *et al*, 2001). Evidence provided by Guiry (Appendix I) would support these

findings, for example, with harvesting promoting vigour. I note that the paper by Guiry identifies a sustainable harvest from Kilkieran of 11,000 wet tons. The NIS states that c.25-35% of the seaweed delivered to PnM will come from Kilkieran. The AA report estimates the total tonnage for the bay to be c.73,000t based on area of seaweed (643ha) and a harvestable tonnage per annum of 14,600t. The figure is 33% higher than the Guiry estimate but is based on more detailed survey data.

Notwithstanding the foregoing, the Department of Housing, Local Government and Heritage is responsible for licensing any proposed seaweed harvesting and this application concerns itself with the physical structures to accommodate seaweed processing. I am satisfied that the applicant has demonstrated in principle that seaweed harvesting can be carried out in a sustainable manner in Kilkieran Bay (i.e. by hand and within a cycle that facilitates the sustainable harvesting), without adverse cumulative effects on the conservation interests of Kilkieran Bay and Islands SAC. Appropriate assessment of the activity of seaweed harvesting, from Kilkieran Bay and elsewhere, is a matter for the Department.

- Sources of fish food. Whilst parties to the appeal raise these issues, I am mindful of case law which has determined that certain upstream activities are 'too remote' from developments to warrant consideration in EIA (An Taisce v ABP [no.2] 2021, IEHC 422). In this instance I would consider the source of fish food, which sits within a different policy framework and is governed by different legal codes, is beyond the scope of this assessment.

7.7.59. **Integrity Test.** Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the project would not adversely affect the integrity of Kilkieran Bay and Islands SAC in view of the Conservation Objectives of this site. This conclusion has been based on a complete assessment of all implications of the project alone and in combination with plans and projects.

7.7.60. **Impact on Connemara Bog Complex SAC**. **Qualifying Interests**. The key issue for this assessment is whether or not the proposed development will adversely affect

the integrity of the SAC by reference to the sites qualifying interests and associated conservation objectives.

7.7.61. Having regard to the nature of the development and its location relative to the qualifying interests of the SAC there is potential for effects on the following (see Table 3):

Coastal lagoons [1150]

7.7.62. Nearest coastal lagoons in the SAC lie c.2.5km to the north east of the PnM site. No hydrological connection exists, however, as the habitat lies north west of the appeal site there is potential for effects as a consequence of air pollution. This issue is discussed above. As stated, predicted effects on nitrogen and ammonia deposition are within the limit values to affect ecological sites and identified qualifying interests of European sites.

Oligotrophic waters containing very few minerals of sandy plans (Littorelletalia uniflorae) [3110]

7.7.63. Macrophyte communities were identified, during field survey, in Lough Skannive and Lough Sheedagh as representative of this habitat type. However, (a) the habitat was not identified in the area of the abstraction works, and (b) the habitat lies outside of the designated SAC and downstream of similar habitat types (e.g. potential 3110 habitats in upstream lakes – see NPWS Conservation Objectives, Map 6). Impact on the Annex I habitat is assessed in the EIA section of this report.

7.7.64. Loch Bhéal na Comhlann is mapped as potentially supporting this qualifying interest. It lies upstream of the proposed peatland restoration area and has been significantly affected by siltation and peat cutting.

7.7.65. Having regard to the foregoing, effects on the attributes and targets of the SAC in respect of this qualifying interest are unlikely.

Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho – Batrachion vegetation [3260]

7.7.66. Rivers and streams are abundant in the SAC. However, little is known of the distribution of high conservation value sub-types. NPWS Conservation Interests report states that all high conservation value sub-types in the site will be associated with natural hydrology (river flow) and likely to require WFD high quality status.

7.7.67. The proposed development lies downstream of rivers and streams in the SAC. The proposed peatland restoration area lies upstream of Owenriff River which has potential for the habitat. Peatland restoration works, subject to mitigation measures (see below), have potential to improve water quality in the river (less siltation) and therefore increase habitat in the area.

Northern Atlantic wet heaths with Erica tetralix [4010]
Blanket bogs [7130]
Depressions on peat substrates of the Rhynchosporion [7150]

7.7.68. Each of the above qualifying interests have been identified as occurring along the northern shore of Lough Skannive which is designated as part of the Connemara Bog and Complex SAC. Alterations to the natural fluctuation in water levels in Lough Skannive have potential to impact on the extent of these habitats which occur within the SAC. The NIS refers to the hydrological data and considers that with the proposed maximum abstraction of 4.8MLD from Lough Ierin (for PnM development and to meet Irish Water requirements), the fluctuations arising from the proposed development remain within natural fluctuations of over 1m based on the monitoring of water levels between August 2019 and June 2020 (see Figure 5-10, NIS). Further, projected changes in water levels are modest, for example, with the mean monthly average reduction in water levels at Lough Skannive during the winter months (September to February) compared to the baseline scenario, ranging from 1.9cm to 6.1cm and the maximum potential short duration reduction in water levels projected to be up to 15cm for 1-2 weeks in November. The maximum average water level reduction in the summer months (May to August) compared to baseline scenario is projected to be 1.2cm to 2.5cm.

7.7.69. Whilst I am satisfied that the applicant's assessment of likely effects on water levels is based on robust data from past monitoring, I have two concerns. Firstly, the model does not appear to take into account the effects of climate change or therefore on how 'natural fluctuations' may change with climate change. I note that in the minutes of the applicant's meeting with the EPA (Appendix 8.9 EIAR), the EPA suggested that it would be advisable to undertake a climate vulnerability analysis of the proposed abstractions. This absence of this assessment of impacts is significant and represents an important lacuna.

7.7.70. Secondly, as stated in section 7.4.5.3.2 of the EIAR, lakeside habitats which exist within the current regime of fluctuations are vulnerable to changes in flooding regime '*Potential impacts on terrestrial ecology along the shores of Lough Skannive and Sheedagh may arise from disruption of the natural winter flooding regime… This would be analogous to artificially reducing flood levels and frequency along flood plains. This has been found to lead to substantial changes in riparian species composition, with a movement of dry-land species into former floodplains'*. The NIS concludes that the alterations to winter water regime is not significant, and that the absolute level changes referred to are modest. However, the conclusion is not explained in the context of the QIs which are mapped on the northern shore of Lough Skannive i.e. their presence in the area of the shoreline likely to be affected and the vulnerability of, or consequences for the species present, of the proposed changes in flooding regime (habitat area, distribution, vegetation composition and structure). It may well be that the changes to the natural flooding regime are very modest in the context of the water regime requirements of the habitats present. However, this is not clear from the assessment carried out and changes in hydrological regime may affect the area, distribution and composition of this QI.

7.7.71. A total of 16.3ha of blanket bog (7130), wet heath (4010) and natural dystrophic lakes (3160), habitats which occur within the peatland restoration area (and SAC), will be restored as part of the development with positive effects on attributes and targets for the QIs.

Salmo solar [1106]

7.7.72. Lough Skannive may represent a migratory pathway for salmon to access SAC (the 2018 electrofishing survey found Atlantic salmon parr (juvenile) in Dooletter River East, spawning habitat in Letterpibrum River considered unsuitable for salmonids). There is also potential for Owenriff River to support salmon.

7.7.73. The proposed development has the potential to impact on migratory routes if water levels in Lough Skannive were to alter significantly and on distribution, abundance etc. of the species with impacts on water quality in Lough Skannive and the Owenriff River. The NIS states that with the strict management of abstraction, water level fluctuations will remain within existing parameters with no effects on migratory

pathways. This conclusion seems reasonable given the nature of fluctuations within the existing maximum and minimum levels.

7.7.74. Mitigation measures (see below) will control water quality during construction and operation. Subject to the strict application of these measures, no significant adverse effects on water quality should arise.

Lutra Lutra [1355]

7.7.75. The NIS states that otters are likely to use Lough Skannive and Owenriff River adjacent to the peatland restoration area. The survey of the zone of influence found no holting sites in proximity to works area. However, there remains potential, therefore, during construction for disturbance and for indirect impacts on the species with significant changes to water quality during construction and operation.

7.7.76. Otters typically are active in the early morning and late evening, outside of working hours. As concluded in the NIS, disturbance is likely to be limited, short term and unlikely to affect the attributes of distribution, extent of terrestrial habitat, extent of freshwater habitat and couching sites and holts. With regard to the peat restoration area, this is already used for turbary and therefore to a similar level of heavy machinery and human activity. For these reasons, significant effects by way of disturbance during bog restoration works are unlikely. In the peatland construction area, disturbance levels will decrease post restoration and cessation of peat cutting.

7.7.77. Water quality will be controlled by strict mitigation measures during construction and operation and subject to these, no adverse effects on Otter should arise. (This includes water quality in Lough Skannive as a result of water transferred from Lough Ierin into Lough Skannive associated with compensatory flows for fish).

7.7.78. Noise disturbance on otter using the area of the Lough Skannive pumping station is unlikely given the modest level of noise predicted to arise and likely habituation.

7.7.79. **Mitigation.**

7.7.80. Mitigation measures are summarised in section 6 of the NIS, with reference to the CEMP for details. Construction mitigation measures include standard measures to minimise the release of sediments and pollutants during construction into surrounding watercourses e.g. use of silt fences and silt curtains, use of water

management systems, management of hydrocarbons, provision of spill kits etc. and adherence to IFI guidelines for works in proximity to watercourses.

7.7.81. Mitigation measure for operation include measures to manage water levels in Lough Skannive. These include a telemetry linked monitoring system including water level gauging, flow gauging and rainfall gauging with the water balance model for the overall Lough Skannive catchment routinely updated and improved upon as further hydrological data is collected to inform the water supply scheme operations and associated necessary modifications. The gauged data and model analysis will be used to demonstrate compliance with WFD, UKTAG and IFI guidelines, the controls and measures put in place are being adhered to and the scheme is not having a significant negative impact on waterbodies and their associated aquatic systems.

7.7.82. During operation mitigation measure for the freshwater supply scheme stringent operational controls to ensure abstraction remains within prescribed limits e.g. controlled abstraction from Lough Skannive for periods when lake levels are less than 95%ile levels (baseline scenario), 95%ile-75%ile etc. to ensure no impact on WFD status, fisheries compensatory flows and improved fish passes at Lough Ierin outlet channel, abstraction inlet mitigation.

7.7.83. **Integrity Test.** Following the appropriate assessment and the consideration of mitigation measures, I am not able to ascertain with confidence that the project would not adversely affect the integrity of Connemara Bog Complex SAC in view of the Conservation Objectives of this site for the following reasons:

- Insufficient detail on the likely effects of changes in hydrological regime on the distribution, composition and structure of water dependent qualifying interests of the site, located on the northern shore of Lough Skannive.
- Absence of the effects of climate change in the water balance model and the risk of in-combination effects of abstraction from Lough Skannive on water dependent qualifying interests of the site, associated with its hydrological connection to Lough Skannive.

7.7.84. **Connemara Bog Complex SPA.** The peat restoration area lies alongside and directly adjoins the southern boundary of this extensive European site, north west of Spiddal. The Special Conservation Interests of this site are four bird species, *Cormorant, Merlin, Golden Plover* and *Common Gull* (see Table 4).

7.7.85. The SPA is characterised by areas of deep peat surrounded by heath-covered rocky outcrops, with the deeper peat areas bordered by river systems and many oligotrophic lakes, resulting in an intricate mosaic of various peatland/wetland habitats and vegetation communities, including Atlantic blanket bog. Species of conservation interest are identified as using various locations throughout the European site, with no reference to the particular occurrences near the bog restoration area.

7.7.86. The bog restoration works are likely to cause short term impacts by way of construction activity. However, the site is worked already for turbary and any birds utilising the site and surrounding area will be acclimatised to this (i.e. noise associated with temporary heavy machinery). Disturbance during restoration works will be short term and similar in disturbance effects during turbary activities (i.e. use of heavy equipment). With cessation of peat cutting and restoration of habitat disturbance levels will decrease.

7.7.87. **Mitigation.**

7.7.88. Mitigation measures are summarised in section 6 of the NIS, with reference to the CEMP for details. Measures include standard techniques to minimise the release of sediments, hydrocarbons and other contaminants and measures to control dust and noise during construction works.

7.7.89. **Integrity Test.** Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the project would not adversely affect the integrity of Connemara Bog Complex SPA in view of the Conservation Objectives of this site. This conclusion has been based on a complete assessment of all implications of the project alone and in combination with plans and projects.

Appropriate Assessment Conclusion

7.7.90. The subject development has been considered in light of the assessment requirements of Sections 177U and 177V of the Planning and Development Act 2000 as amended.

7.7.91. Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on three European sites, Kilkieran Bay

and Islands SAC, Connemara Bog Complex SAC and SPA. Consequently, an Appropriate Assessment was required of the implications of the project on the qualifying features of those sites in light of their conservation objectives.

7.7.92. Following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or project may adversely affect the integrity of the European site No. 002034 Connemara Bog Complex SAC in view of the site's Conservation Objectives for the following reasons:

- Insufficient detail on the likely effects of changes in hydrological regime on the distribution, composition and structure of water dependent qualifying interests of the site, located on the northern shore of Lough Skannive.
- Absence of the effects of climate change in the water balance model and the risk of in-combination effects of abstraction from Lough Skannive on water dependent qualifying interests of the site, associated with its hydrological connection to Lough Skannive.

7.7.93. As stated in earlier sections of this report, I am also concerned that there is a lack of clarity regarding the reliance of the conclusions of the water balance model on works to Loughaunore which do not form part of the planning application.

8.0 **Recommendation**

8.1. Having regard to the matters raised in the planning, environmental impact and appropriate assessment sections of this report, I am satisfied that the proposed development would make a positive contribution to the economy of the local area and in this regard is consistent with the wider policy context. However, the proposed development takes place in a sensitive natural environment. I am not satisfied that (a) the applicant has adequately demonstrated that the development can be accommodated within the carrying capacity of the environment in which it is located, primarily in respect of the water environment, or (b) that robust conclusions can be drawn in respect of the absence of effects on European sites. I would recommend therefore that the Board seek further information in the matters which have not been adequately addressed or refuse permission for the development for the following reasons and considerations.

9.0 **Reasons and Considerations**

1. Having regard to the absence of comprehensive information on the potential effects on climate change on the applicants water balance model, which provides the basis for the assessment of hydrological effects, the Board is not satisfied that the proposed development can take place within the carrying capacity of the Lough Skannive catchment without adverse effects on biodiversity, archaeology and the likely future demands of Carna-Kilkieran Regional Water Supply Scheme. The proposed development would therefore be contrary to the proper planning and sustainable development of the area.
2. Having regard to the location of the site, adjoining and hydrologically connected to Connemara Bog Complex SAC, the Board is not satisfied, on the basis of the submissions made in connection with the planning application and the appeal, that adequate information has been provided on the on the effect of the proposed hydrological regime of the Qualifying Interests of the European site along the northern shore of Lough Skannive, or the likely effects of the proposed abstraction regime on water levels in Lough Skannive in-combination with potential effects of climate change . The Board is not in a position to conclude that the proposed development individually, or in

combination with other plans or projects would not adversely affect the integrity of Connemar Bog Complex SAC (Site code 002034), in view of the site's conservation objectives, and the Board is precluded from granting permission for this proposed development.

Deirdre MacGabhann
Planning Inspector

4th August 2022