Galway Harbour extension
(Strategic Infrastructure Case 61.PA0033)
2024 EIS & NIS Addenda:
Review comments

For An Bord Pleanála –Project P-ABP-005
March 2025

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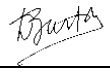
Daniel Bastreri			Director

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Executive Summary

A Strategic Infrastructure Development (SID) application for the extension of Galway Harbour was originally lodged with the Board in January 2014. The Board concluded that the proposed extension would have significant adverse effects on three of the qualifying interests of Galway Bay Complex SAC, namely fucoid-dominated reef habitat [1170], intertidal mud and sandflat habitat [1140] and perennial vegetation of stony banks [1220], and decided to investigate if the proposal could be considered under Article 6(4) of the Habitats Directive.

Since then, this proposal has navigated its way through the Imperative Reasons of Overriding Public Interest (IROPI) process with final ministerial approval for compensatory measures issued on 27th February 2024.

Considering the time lapse since the original planning application, Galway Harbour Company (GHC, the applicant) was asked to comprehensively review:

- The chapters of the EIS originally submitted (January 2014).
- The subsequent Addenda to the EIS (Submitted by way of response to Request for Further Information ("RFI") dated October 2014, as well as at the Oral Hearing January 2015 and the chapters of the Natura Impact Statement ("NIS") and Compensatory Measures proposed.
- New data available since and an assessment of validity of earlier conclusions.

The applicant submitted an updated Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) on 27th September 2024 for the consideration of the Board. Both included a number of appendices and addenda. I was appointed by the Board in February 2025 to review and comment on these submissions and produce a written report to the presiding inspector in relation to the above.

My conclusions after reviewing the relevant documents are:

The EIS Addendum includes a large volume of valuable environmental data and information. These adequately describe the existing coastal and marine environment, including lagoonal, intertidal and subtidal habitats and their biological communities.

Eight additional ecological surveys were conducted between 2022 and 2024, including terrestrial habitats, lagoons, intertidal and subtidal marine surveys, marine mammals survey, otter and bat surveys. The results of these surveys contribute to the substantial volume of data and information that had been obtained during the preparation of the original EIS and subsequent stages of the planning application process. The

comparison of new survey results with previous data confirm that earlier conclusions remain valid. As a result, the earlier conclusion that the proposed development with appropriate mitigation measures will not have significant adverse effects on the environment and/or the Qualifying Interests (Qis) of Galway Bay SAC remains valid.

All potential direct, indirect and cumulative impacts of the proposed development on the receiving environment have been adequately assessed, following national and EU guidance (CIEEM 2024, Department of Housing, Planning and Local Government, 2018). There have been no changes to the project design since the planning application was lodged in 2014, and the results of the surveys conducted between 2022 and 2024 do not change the baseline conditions in any significant way.

Nine SACs included within a buffer zone of 15km of Galway Bay SAC have since been revised with additional QIs. The QIs are listed in the associated Conservation Objectives document or Site Synopsis document for the site, and the most recent versions of these documents have been used to determine any change in the QIs since the time of the original EIS and NIS submission. This information was also used to complete a cumulative impact assessment.

Mitigation measures to avoid when possible or minimise potential impacts on the receiving environment were originally set up in the original EIS. These have not changed, but some adjustments were made to improve mitigation measures for underwater sound and vibration during construction. Accompanying mitigation measures have also been proposed. The proposed mitigation measures are adequate, and for the cases in which mitigation is not possible, such as the loss of 14.51ha of fucoid-dominated reef habitat, intertidal mud and sandflat habitat [1140] and 0.63ha of stony bank habitats [1220] which are Qis of the SAC, appropriate compensatory measures have been developed and accepted. These are further discussed in the NIS section.

Only two residual environmental impacts remain after impact avoidance and mitigation. The proposed harbour extension will have significant adverse effects on three of the qualifying interests of Galway Bay Complex SAC, namely fucoid-dominated reef habitat [1170], intertidal mud and sandflat habitat [1140] and perennial vegetation of stony banks [1220]. To compensate for these losses, a series of effective mitigation measures were developed and accepted. Further additional mitigation was added at a later stage, these are discussed in detail in the NIS section.

The 2024 NIS Addendum adequately identifies all the designated sites and all their QIs that could be adversely affected by the Galway Harbour extension. Based on the above analysis, and having regard to EU Guidance on the matter, the 2024 NIS Addendum concludes that the proposed development is unlikely to affect the integrity of a European Site.

The proposed compensatory measures – including accompanying measures – are adequate to protect the overall coherence of the Natura 2000 network and address the environmental impacts of the Galway Harbour Extension project. There is now a consistent base of evidence supporting the conclusions relevant to the matter – i.e. that the proposed CMs and associated or complementary CMS etc. address, in comparable proportions, the habitats and species negatively affected and that they will maintain and enhance overall coherence.

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1. Introduction

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2. The Brief

I have been appointed by the Board to deliver the following scope of work:

1. Review the marine ecology elements of the project insofar as they relate to project amendments and submissions / observations received by the Board post receipt of the notice dated 27th February 2024 from the Minister for Housing, Local Government and Heritage under Section 177AB (3) of the Planning and Development Act 2000 (as amended).

2. Assess the adequacy of the ecology section of the Environmental Impact Statement (EIS) Addendum of 2024 (including all addenda) in terms of:

   a. Describe the existing environment,

   b. Assess the direct, indirect and cumulative impacts,

   c. Set out adequate mitigation measures to reduce or avoid potential impacts, and

   d. Identify adverse residual impact post mitigation.

3. Assess the adequacy of the Natura Impact Statement (NIS) Addendum of 2024 (including all addenda). This should include the identification of all designated sites which could be impacted upon and all the qualifying interests which could be adversely affected by the proposed development. The report should form a conclusion based on the above analysis whether or not the proposed development is likely to affect the integrity of a European Site having regard to EU Guidance on the matter. Particular reference should be made to the issues of habitat loss and compensatory measures, accompanying measures and additional environmental benefits.

4. Review and evaluate submissions relating to marine ecology received as part of the public consultation process. Relevant submissions will be supplied to you following the close of the consultation on the EIS and NIS Addenda on 7th February 2025.

5. Make a written report to the presiding Inspector in relation to the above application.

2.1 Documents included in my review

A compelling amount of new information and documents were produced by the applicant to address the request made by the Board to review and update the original EIS, NIS and their respective appendices and addenda. Following an initial revision of the documents submitted by GHC and consultation with the Board, the following documents were reviewed:

EIS Addendum Volume 1
Chapter 1. Introduction and background
Chapter 2. Planning & Policy
Chapter 7. Flora and fauna
Chapter 8 Water (water quality only)
Chapter 10. Noise & vibration (underwater noise & vibration only).

EIS Addendum Volume 2
Appendix 10.1 to 10.5 Noise (underwater only)
Appendix 7.1 Intertidal habitat assessment (Renmore) June 2023
Appendix 7.2 Renmore stony bank report
Appendix 7.3 Galway Bay subtidal benthic survey report 2023
Appendix 7.4 Renmore intertidal benthic survey report 2023
Appendix 7.5 Waterbird survey winter 2022-23
Appendix 7.6 Marine mammal observer report 2023
Appendix 7.7 Marine mammal desk study report 2023
Appendix 7.9 Lagoon benthic surveys 2024

NIS Addendum September 2024
Appendices to NIS Addendum
Appendix 10.1 to 10.5 Noise (underwater only)
Appendix A: Intertidal habitat assessment (Renmore) June 2023*****
Appendix B: Galway Bay subtidal benthic survey report 2023*****
Appendix C: Marine mammal observer report 2023*****
Appendix D: Lagoon benthic surveys 2024*****
Appendix E: Renmore stony bank report*****
Appendix H: Waterbird survey winter 2022-23*****
Appendix I-1: Response to An Bord Pleanála arising from National Parks and Wildlife Service Queries on Compensatory Measures Plan
Appendix 1-2: Compensatory Measures Plan, Accompanying Measures and Additional Environmental Benefits (2022)
Appendix 1-3: 2022 Addendum to NIS to include to include Consideration of the Compensatory Measures, Accompanying Measures and Environmental Benefits

(NIS Appendices marked as * are also appendices of the EIS).

Public Consultation

Submissions relating to marine ecology received as part of the public consultation process were received from:

- An Taisce – The National Trust for Ireland
- Department of Housing, Local Government and Heritage
- Inland Fisheries Ireland
- Mr Vincent Connell – Galway Bay Fishermen's Association

3. Environmental Impact Statement Addendum

A significant number of Chapters and Appendices of the EIS Addendum relate directly or indirectly to marine ecology. In the context of this review, marine ecology includes biological, physical and chemical variables that may affect the Qualifying Interests (Qis) of Galway Bay Complex Special Area of Conservation (SAC).

For clarity, my review comments will follow the same structure of the brief. Review comments will be focused on the data and results where new information has been included and conclusions updated on the basis of this new information.

Additionally, this report aims to provide a summary of the comprehensive and extensive new information in the EIS Addendum and its appendices

3.1 Comments on relevant chapters in the EIS

3.1.1 General observations

The EIS Addendum would have been much improved by careful editing and avoiding repetition. Structure is confusing, and little effort was made to unify the different sections, written by various authors, and make them consistent. As a result, this is an unnecessarily long document. Despite the abundance of valuable data and information, these are often lost within an excess of not so relevant information. Given that the EIS Addendum has many appendices, it would have been advisable to limit the contents of the main report to the key relevant points and information, specifically, comparing the results of the latest surveys with the previous survey results, and evaluating whether these change the previous baseline and the impact assessment and management. These points are not adequately addressed in some of the chapters.

3.2 EIS Addendum Chapter 1: Introduction & Background

The addendum reviews the original EIS submitted in January 2014 and subsequent updates, confirming that the project design, details and context remain unchanged, with an additional need to support offshore renewable energy installations. This is relevant for the review of the subsequent chapters, but has no other connection to marine ecology.

3.3 EIS Addendum Chapter 2: Planning & Policy Context

The document reviews the planning and policy context for the proposed development, assessing its alignment with various policy documents at European, national, regional, and local levels. It confirms its alignment with existing policies, strategies and plans at regional, national and European level.

Most relevant, a Cumulative Impact Assessment (CIA) has been conducted, considering all planning applications lodged or present since 2014 within a 15km buffer zone, including both terrestrial and marine areas. The projects considered for CIA are selected from this list as are deemed relevant for each discipline within each chapter of the EIS addendum.

3.4 EIS Addendum Chapter 7: Flora and Fauna

It is stated in section 7.3 (Page 5) that *"This document will review and confirm if the data that was used remains valid, and similarly review the results published in the previous EIS documents and also update any sections with additional relevant results and data as appropriate. This report includes any updates to conservation objectives documents for the relevant European Sites and consider and include updated terrestrial and marine survey data."*

The wording in 'if the data that was used remain valid' is confusing – I believe that what was meant is that if the baseline that was used remains valid. Data does not lose validity over time - biological communities and other environmental variables may experience fluctuations over the period of time in consideration (11 years), so previous data may not necessarily reflect present conditions. However, and in the absence of significant natural or anthropogenic impacts, it is unlikely that that changes will be of a scale of magnitude that could potentially invalidate the impact assessment and conclusions made in the original EIS.

The Irish Government's 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (Department of Housing, Planning and Local Government, 2018) define baseline as "*A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".* 'Current' is what is relevant for the EIS Addendum, and on this basis, I assume in all my review comments on this chapter that the objective is to determine whether the baseline considered for the impact assessment process has changed in a way that would affect the conclusions made in the original EIS.

3.4.1 Section 7. 6.3.1 Lagoon surveys (and Appendix 7.9)

Surveys were conducted in Lough Atalia and Renmore Lough in 2011-2013. These included bathymetry, salinity, current speeds and directions, and benthic ecology. It had been noted that Lough Atalia is very species poor with six of the ten sites surveyed

returning no fauna and two of the remaining four only returning 1 species each. Overall, the conditions at Renmore Lough were also considered to be poor.

The benthic survey of Lough Atalia was conducted to document the current status of the area with reference to the previous surveys carried out for the proposed development. The survey took place on 12 July 2024. Results documented similar conditions to those found in previous surveys (2011 and 2013): sublittoral soft anoxic mud, with bacterial mats of the sulphur-reducing filamentous bacteria *Beggiatoa spp*. and the green macroalgae *Enteromorpha spp*. The anoxia may be a result of natural conditions of poor water exchange in the lough coupled with nutrient enrichment from agricultural runoff. Benthic fauna is impoverished at the site, with few elements of the infaunal communities present in other muddy biotopes. This has been recorded in detail during the survey, which includes drop-down camera images.

For the same objective, a sweep net and probe survey at two locations in Renmore Lough was carried out in August 2023. The sweep net survey showed similar faunal composition to previous surveys undertaken in 2013 and 2016, with lagoonal specialists like *Ruppia sp*. and *Ecrobia ventrosa* recorded in all three surveys. Water chemistry indicated brackish conditions and high chlorophyll levels, suggesting eutrophic conditions.

This section provides an excellent description of the existing environment in the loughs. The results from the 2023 surveys show that the benthic habitat conditions in Lough Atalia and Renmore Lough remain unchanged since the original EIS.

3.4.2 Section 7.6.4.1. Intertidal benthic fauna survey (& Appendix 7.1 & 7.4)

A survey of intertidal benthic epifauna and infauna was conducted to document the current status of the area with reference to the results of previous surveys carried out (Section 7.6.4.1, page 29) on 15 and 16 June 2023. A 0.25m² quadrat was used to record the epifaunal species present, their abundance and the substrate type. Abundance was recorded as percentage (%) cover where possible.

Intertidal sediment samples were collected at 10 stations (Figure 1), using corers of 18cm of diameter to a depth of 15cm. 3 replicate samples were collected in each station, two of these for benthic macrofauna analysis and one for grain size and organic carbon analysis. The results of the Intertidal survey are available in the Appendix 7.1.

No rationale for the location and number of these stations is provided neither in Chapter 7 nor Appendix 7.1. The location of the original sampling stations of the previous surveys (2004, 2011 and 2016) were not shown in the original EIS, and these are not shown in the EIS Addendum either, so it is not clear whether the 2023 samples were taken at the same locations as the previous ones.

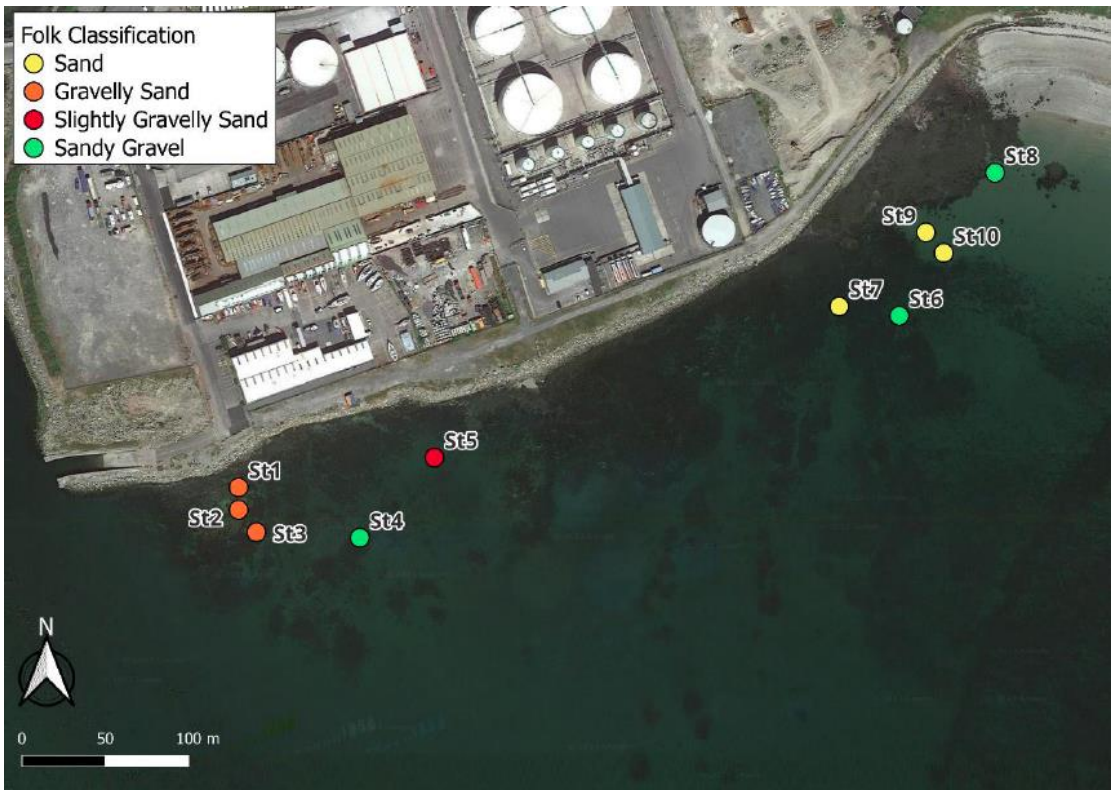

Figure 1. Location of intertidal core samples.

Sediment particle size analysis (PSA) show that the intertidal material collected at Renmore is a mix of medium and fine gravel, with high proportions of very coarse to coarse, medium and fine sand, with very low proportion of fines (silt and clay).

The report concludes that the results of these surveys show that variation in abundance and community types is minor, overall variation not considered significant, and as a result, that the conclusions reached in chapter 7 of the original EIS remain valid. However, no comparison was made between the 2023 data and the 2010/2016 data; instead, the sparse 2023 dataset was used for numerical univariate and multivariate analyses to establish comparisons between different stations. I do not consider that this is the best approach to meet the objective of the Addendum – to compare the current baseline data with the baseline data used in the original impact assessment.

Multivariate analyses - Multidimensional Scaling (MDS) and Hierarchical Agglomerative Clustering (HAC) were conducted with a standard and widely used software (PRIMER). According with the results of these analyses, the samples were separated in four groups (a, b, c & d). Results of these analyses are reported as follows:

Stations 1,2 & 3 have the highest diversity and abundance values (group c) followed by 5, 6 & 7 (group d). Stations 4, 8, 9 & 10 have the lowest values of diversity and abundance (groups b & a).

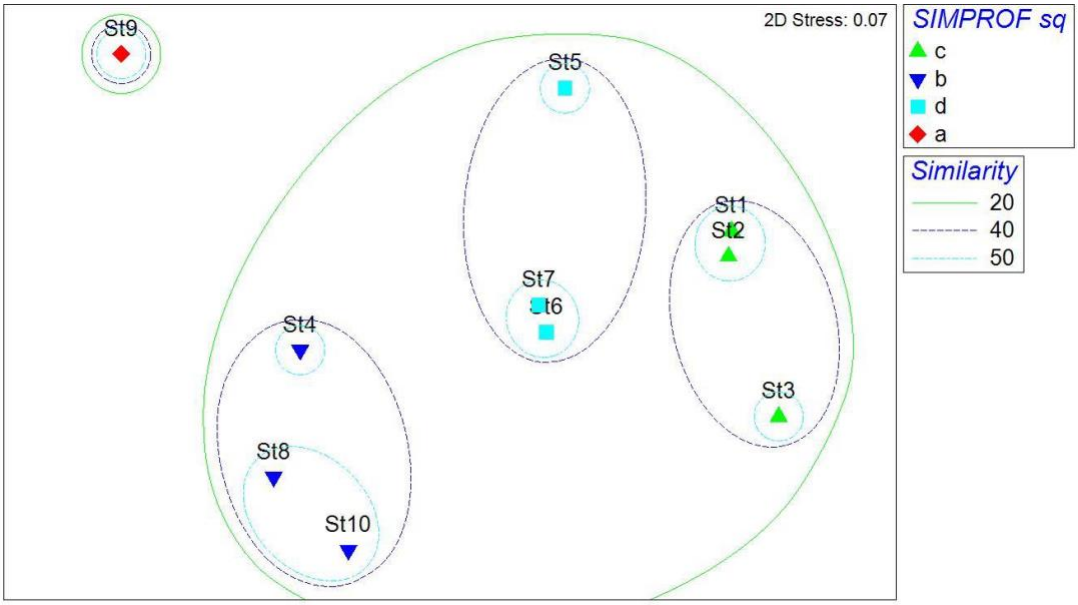

Figure 2. MDS representation of similarity between samples. (Note: this is a 2D representation of a 3D ordination of 'points' (samples in this case) in a three-dimensional 'conceptual' space).

In reality, station 9 (group a) is an outlier, as only 7 individuals were found in in the sample, and for this reason, it should have been left out of this analysis. As a result, there are in my view only three groups, which are b (stations 4, 8 & 10), c (stations 1,2 & 3) and d (stations 5, 6 & 7). Groups c & d are however very similar to each other in terms of dominant species. The representation of similarity is shown in figure 2.

In any case, the paucity of data points and number of samples of small volume and a very small number of individuals advise to take the results of this multivariate analysis with caution.

The three groups (accounting for 9 of the 10 stations) were attributed to the biotope LS.LSa.MuSa.HedMacEte - *Hediste diversicolor*, *Macoma balthica* and *Eteona longa* in littoral muddy sand (EUNIS code: A2.243). However, the type of sediment found at the sites does not seem to confirm this. Most likely, the separation into the 3 groups results from variations in abundance of individuals and type of sediment.

Despite lack of comparison between present and past data, the qualitative information and limited, partial quantitative data provide an acceptable description of the current status of these intertidal habitats and their biological communities. Overall, this information suggests that no significant change took place between 2011 and 2014. In

the absence of significant natural or human impacts, this relative stability of the epifauna and macrobenthic infauna over such a short period of time is to be expected.

3.4.3 Section 7.6.4.2. Subtidal Benthic Fauna

A subtidal benthos infaunal survey was undertaken in May 2023. 6 sample stations (Fig. 1) were chosen among the original 12 (Fig. 3), based on their "*representative nature of the main infaunal assemblages found in the 2010 survey*". However, it is not stated how and why these 6 samples were representative, nor the reason for reducing the scope of the survey from 12 to 6.

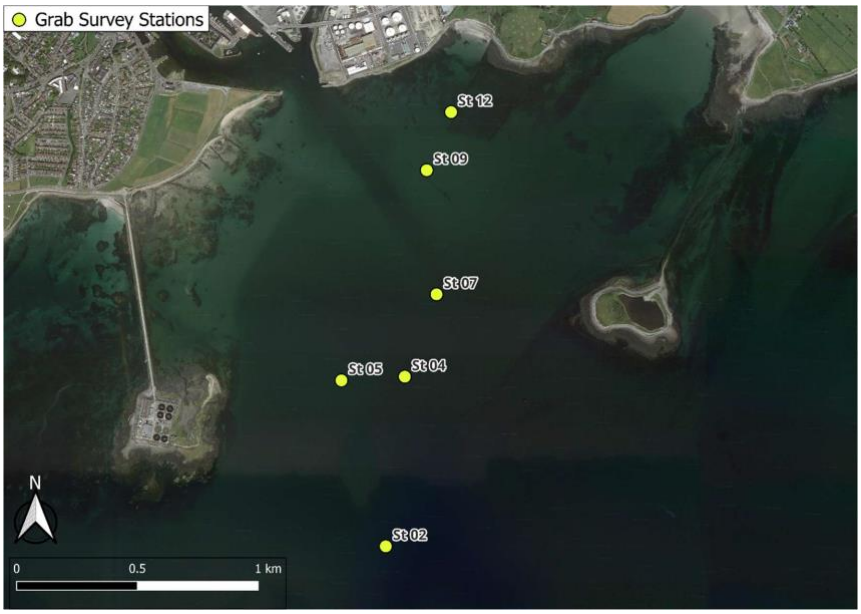

Figure 3. Subtidal sampling stations (2023)

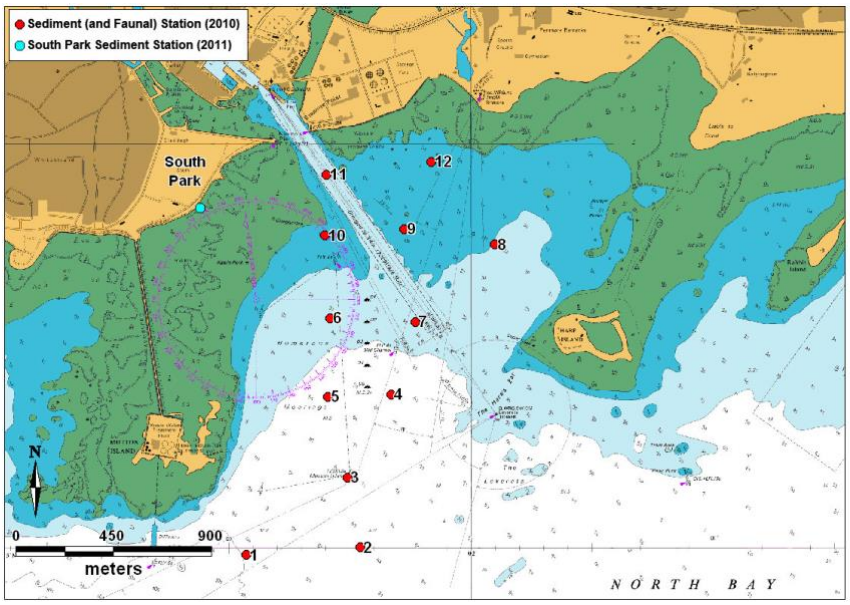

Figure 4. Subtidal sampling stations (2010)

Three replicate samples were collected at each station using a 0.25m^2 Van Veen grab, operated from a RIB (presumably by hand), comprising two grabs for benthic faunal analysis and a third grab sample for sediment analysis (particle size analysis and organic carbon content.

The report concludes that "In comparing the studies carried out over multiple years for subtidal benthic fauna, only small variations can be seen in abundance and community types. Some variations can also be seen in the sediment composition at some of the stations analysed. The overall variation in faunal communities and sediments is not considered significant or to have given rise to any change in the conclusions reached in Chapter 7 of the original EIS".

The present report is focused on the quantitative and qualitative differences between the samples taken in 2023, without attempting to compare these with the 2010 and 2004 results, as it would have been necessary to validate or modify the pre-construction baseline and the impact assessment previously done. Despite this omission, the 2023 subtidal macrobenthic data suggest that consistent but non-significant differences in the taxa abundance, diversity, and species dominance are likely to be connected to sediment and faunal heterogeneity and varying scales of patchiness. Appendix 7.3 concludes (Section 4, page 16) that "While *the groupings within the present study vary when compared to the 2010 survey, the biotopes recorded are typical of the study area and to be expected in the shallow, moderately exposed site*." I agree with the second part this statement, but I have reservations regarding the methodology used for multivariate analyses for both intertidal and subtidal macrobenthos data. Discussion of the detailed technical aspects of multivariate analysis is outside of the scope of my present review, but these were detailed in my previous reports to the Board related to the Compensatory Measures Report (P-ABP-003 and P-ABP-004, dated September 2019 and February 2020 respectively).

As is the case with the intertidal data analyses, multivariate analysis of the 2010 and 2023 data would have been more useful to determine whether significant changes took place in the composition of subtidal macrobenthic communities at the site.

Despite this, the results of the 2023 subtidal survey demonstrate that many species that were abundant or dominant species at the site in 2010 - adapted to on-going natural stresses and disturbances – continue to be present. Natural changes in sediment type (particle size distribution) may explain the differences. This information can be considered as an adequate description of the subtidal macrobenthic communities. No significant change has been detected in the baseline conditions.

3.4.4 Appendix 7.2 Stony bank

The document is a survey report on the shingle vegetation at Renmore conducted in August 2017. The surveyed area is approximately 0.50 hectares and is part of the EU Annex Habitat "Perennial vegetation of stony banks" within the Galway Bay Complex Special Area of Conservation.

Key findings include:

Vegetation Composition: The shingle habitat supports species-rich vegetation dominated by sea radish (Raphanus maritimus) and false oatgrass *(Arrhenatherum elatius*). Other frequent species include dandelion, ribwort plantain, red fescue, bramble, ragwort, and couch grass. Non-native species such as blue lettuce (*Lactuca tatarica*), narrow-leaved ragwort and potato were also noted.

Habitat Condition: The habitat is assessed as Unfavourable-Inadequate due to the high occurrence of non-native species and negative indicator plants, particularly *Lactuca tatarica*.

Management Recommendations: Future management should focus on reducing the cover of non-native species and native shrubs. Permission from the National Parks and Wildlife Service is required for any management activities. Monitoring should continue, especially if the new Galway Port facility is constructed, to assess the impact on the habitat.

The report emphasizes the importance of protecting the shingle habitat from threats such as shingle extraction, storm damage, and agricultural activities. Overall, this habitat has been adequately described.

3.4.5 Section 7.6.5 Birds & Appendix 7.5 intertidal bird survey report

The report presents the results of waterbird surveys conducted for the Galway Harbour Extension project during the winter of 2022/23. The objectives of these surveys are to update waterbird data for the development area and provide additional coverage of adjacent areas. These are clear objectives, which are consistent with the requirements of the survey and impact assessment to inform EIS.

A full rationale for the survey scope and methods is provided. This is entirely aligned to the specific objectives of the work. The survey was planned to comprise one vantage point watch and one tidal cycle count per month between October 2022 and March 2023. Each vantage point watch was of eight hours duration and timed to include the three-hour period around low tide. Each tidal cycle count included single low tide, ebb/flood tide and high tide counts. There was no fixed duration specified for the tidal

cycle counts; the durations were the time required to complete the counts. Some counts were timed to finish around sunset, so that that the occurrence of any nocturnal roosts could be detected.

Results of the 2022-2023 bird survey were compared with the 2011-2014 results. Key findings are:

- The GHE count area generally supports very low numbers of waterbirds, with no species occurring in numbers of national importance.
- Significant numbers of several species were recorded in the tidal cycle counts, but numbers in sectors adjacent to the GHE count area were relatively low.
- The only frequently used high tide roosting area was exposed intertidal rocks at the western end of South Park Shore.
- Turnstones occurred less frequently and in lower numbers compared to previous surveys, reflecting a national population decrease.
- The density of waterbirds in the subtidal zone decreased with distance from the shoreline, likely due to lower detection rates of more distant birds.
- The most frequent disturbance impacts to waterbirds were from pedestrian and dog activity, with minimal disturbance from watercraft activity.

Based on the results of the surveys and analysis presented in the original EIS, those detailed in the EIS Addendum and the bird report (Appendix 7.5), it can be confirmed that there were no significant changes in the bird populations utilising the study area during the time of the original surveys. As a result, the conclusions drawn in the original EIS remain valid.

These results are not likely to significantly change the previous assessment of the potential impact of the Galway Harbour Extension project, and provide more data and information for comparison with future monitoring results.

3.4.6 Section 7.6.6. Marine Mammals & Appendices 7.6 & 7.7

Data from the last 5 years from the National Biodiversity data Centre and National Parks and Wildlife Services were used for a desk study of marine mammals sighted in Galway Bay Complex SAC. These include harbour seal, grey seal, harbour porpoise and bottlenose dolphin. The results of this study indicate that these four species were recorded in the SAC within the last 5 years, with the exception of Harbour porpoise,

which had no recent recordings within the area. Last sightings were recorded by Berrow *et. al*. in 2014.

Additionally, a marine mammal survey was carried out by a qualified Marine Mammal Observer (MMO) between the 18 January 2023 and 28 April 2023 during daylight hours. Observations were made from Nimmo's Pier and a boat in Galway Bay using binoculars and an iPhone camera. Environmental variables such as wind direction, sea state, and visibility were recorded. The survey aimed to record marine mammal activity near the proposed development site.

Marine mammal sightings were documented, including species identification, group size, behaviour, and travel direction. A total of 109 sightings were recorded, including four different species: harbour seal, grey seal, bottlenose dolphin, and otter. Harbour seals were the most frequently sighted species. Behaviours observed included travelling, foraging, playing, resting, and feeding. Sightings were influenced by tidal phases, with most occurring during flood tides.

Section 7.6.6.2 (Page 40) concludes that *"A full description of recent data available through both desk and field study sources to provide a comprehensive baseline of the existence and abundance of species within the vicinity of the proposed development is available in Appendices 7.6 & 7.7."*

In this respect, Appendix 7.6 concludes that "*the information gathered in this report was in accordance with previous literature and should be considered as a baseline. The finding that otter and common seal were the commonest recorded aquatic mammals in the area is the same as for previous surveys in the area."* Presumably, this means that this is accordance with previous survey data, but these are not presented in the report and appendices, and no quantitative comparison between the most recent (2023) data and previous data has been done. Considering the mainly qualitative nature of marine cetacean data (number and location of sightings), it is also my view that the information in the EIS Addendum confirms that there are no evident changes in the presence of marine cetacean species within the proximity of the proposed development. In consequence, the conclusions on impact assessment, avoidance and mitigation for marine cetaceans remain valid.

A desk study was conducted to verify the findings and conclusion of previous otter surveys and the conclusions of the impact assessment of the proposed development in the otter populations at the site.

Otter sightings were also recorded during the marine mammal survey, and a field assessment was also conducted to determine whether there had been any significant changes to the baseline environment in terms of otter habitat since the submission of the EIS and associated documentation. The results of this field assessment conclude there have been no significant changes to the otter habitats within the site of the

proposed development. During the surveys undertaken, no otter resting or breeding sites were recorded within the proposed development boundary or potential zone of influence.

Section 7.6.6.3.4 (Page 42) concludes that the baseline otter habitat as previously described in the EIS, remain valid and appropriate to inform the Impact Assessment. This is difficult to ascertain, since no comparison with the previous data or conclusions have been undertaken or reported.

3.5 EIS Addendum Chapter 8: Water

This chapter is a comprehensive review of the original EIS for the Galway Harbour Extension project, focusing on the water quality status and coastal hydrodynamic processes in Inner Galway Bay since the original EIS in 2014.

The original EIS covered aspects like bathymetry, water quality, hydrodynamics, wave climate, flood risk, sediment transport, salinity, and outfall dispersion simulations. Mitigation measures were proposed to manage impacts during construction and operation.

No significant changes to the proposed harbour development's design, layout, or mitigation measures took place since the original EIS.

Updates include new bathymetric surveys, water quality data, river flow statistics, tidal flood levels, and wave climate analysis. The findings confirm the stability of seabed levels and validate the original EIS conclusions.

The document discusses allowances for climate change impacts, including sea level rise and increased storm intensity. The design flood level has been updated to account for these factors.

Other projects in the area were considered in the addendum, to identify and assess potential cumulative impacts. The cumulative impact assessment concludes that no significant cumulative impacts on the water environment will result from the harbour extension combined with other developments.

The original EIS conclusions remain valid. The proposed harbour development is appropriate for the high flood risk zone, and the mitigation measures will ensure the protection of water quality and flood risk management.

Overall, the addendum confirms that the original EIS findings and mitigation measures are still relevant and effective, with no significant changes to the baseline environment or project impacts.

3.6 Chapter 10 Noise & vibration

The addendum reviews the original noise and vibration assessment, summarises original and new findings, identifies areas that require update and the validity of the original EIS conclusions. The document includes extensive references to standards, guidelines, and scientific literature used in the assessment.

The review covers the original EIS, responses to requests for further information (RFI), oral hearing documents, and compensatory measures reports. It identifies relevant updates and assesses their implications. These include changes in acoustic standards, new receptors, baseline noise levels, construction and operation sources, predictive methodologies, impact assessment, and mitigation measures.

The addendum concludes that original EIS findings remain broadly valid, with some updates required, particularly for marine mammal noise thresholds and exclusion zones. Mitigation measures and monitoring programs are updated to reflect new guidance and data.

Overall, the addendum gives assurance that the noise and vibration impact assessment for the Galway Harbour Extension project remains valid.

4. EIS Addendum: Conclusions

4.1 Description of the existing environment

The EIS Addendum includes a large volume of valuable environmental data and information. These adequately describe the existing coastal and marine environment, including lagoonal, intertidal and subtidal habitats and their biological communities.

Eight additional ecological surveys were conducted between 2022 and 2024, including terrestrial habitats, lagoons, intertidal and subtidal marine surveys, marine mammals survey, otter and bat surveys. The results of these surveys contribute to the substantial volume of data and information that had been obtained during the preparation of the original EIS and subsequent stages of the planning application process.

4.2 Impact assessment

All potential direct, indirect and cumulative impacts of the proposed development on the receiving environment have been adequately assessed, following national and EU guidance (CIEEM 2024, Department of Housing, Planning and Local Government, 2018). There have been no changes to the project design since the planning

application was lodged in 2014, and the results of the surveys conducted between 2022 and 2024 do not change the baseline conditions in any significant way.

Nine SACs included within a buffer zone of 15km of Galway Bay SAC have since been revised with additional QIs. The QIs are listed in the associated Conservation Objectives document or Site Synopsis document for the site, and the most recent versions of these documents have been used to determine any change in the QIs since the time of the original EIS and NIS submission. This information was also used to complete a cumulative impact assessment.

4.3 Mitigation measures

Mitigation measures to avoid when possible or minimise potential impacts on the receiving environment were originally set up in the original EIS. These have not changed, but some adjustments were made to improve mitigation measures for underwater sound and vibration during construction. The proposed mitigation measures are adequate, and for the cases in which mitigation is not possible, such as the loss of 14.51ha of fucoid-dominated reef habitat, intertidal mud and sandflat habitat [1140] and 0.63ha of stony bank habitats [1220] which are Qis of the SAC, appropriate compensatory measures have been developed and accepted. These are further discussed in the NIS section.

4.4 Residual impact post-mitigation

Only two residual environmental impacts remain after impact avoidance and mitigation. The proposed harbour extension will have significant adverse effects on three of the qualifying interests of Galway Bay Complex SAC, namely fucoid-dominated reef habitat [1170], intertidal mud and sandflat habitat [1140] and perennial vegetation of stony banks [1220]. To compensate for these losses, a series of effective mitigation measures were developed and accepted. Further additional mitigation was added at a later stage, these are discussed in detail in the NIS section.

5. NIS Addendum and appendices report

The original Natura Impact Statement (NIS) and subsequent Addenda/Errata documents assessed the potential impacts of the proposed development on the Qualifying Interests (Qis) of Galway Bay Complex SAC, including the positive impacts associated with the proposed compensatory measures at Tawin Island.

The Addendum reviews the data and information that were used in the original NIS to confirm whether these remain valid and update any sections with additional relevant results and data as appropriate. The report includes updates to conservation objectives documents for relevant SACs and Special Protection Areas (SPAs) sites and updated terrestrial and marine survey data. It is a comprehensive addendum, which includes updates on surveys, data and policy developments relevant to the project. These include the use of updated guidelines for assessing the impact of projects on Natura 2000 sites. The review considers the results – data and information – of new surveys conducted in 2023 and 2024, including intertidal and subtidal benthic fauna, marine mammals, lagoons, and bird surveys. In the light of these and previous information, the potential impacts on Natura 2000 sites are assessed, as well as the potential cumulative impacts and proposed mitigation measures.

5.1 Recent survey results

Summary of new surveys in the NIS Addendum

- Intertidal Habitat Survey: Conducted in 2023, the survey found small variations in species abundance and community types compared to previous surveys, but no significant changes affecting the overall conclusions.

- Subtidal Habitat Survey: Conducted in 2023, the survey showed some changes in sediment composition and faunal communities, but these variations were not significant enough to alter previous conclusions.

- Marine Mammal Observer Survey: Conducted in 2023, the survey recorded sightings of Harbour Seal, Grey Seal, and Bottlenose Dolphin, with no conclusive observations of Harbour Porpoise. The findings indicate potential for significant effects on marine mammals if appropriate mitigation is not in place.

- Lough Atalia and Renmore Lough Lagoon Survey: Conducted in 2024, the survey found similar conditions to previous surveys, with anoxic sediments and low species diversity. No significant changes to the baseline were observed.

- Otter Survey: Conducted in 2024, the survey found no significant changes to otter habitats within the proposed development area.

- Bird Survey: Conducted in 2022/23, the survey found no significant changes in bird populations compared to previous surveys. The area continues to support low numbers of waterbirds, with no species of national importance present.

The key findings relevant to marine ecology from the updated surveys in the Galway Harbour Extension are summarised in the NIS Addendum. My specific comments on the new data and conclusions have been discussed in the EIS section. Overall, I agree with the conclusion made in the NIS Addendum in that the new survey data does not introduce significant changes to the baseline that was used for the original impact assessment.

5.2 Appendix I-1: Response to An Bord Pleanála arising from NPWS queries on compensatory measures plan

The document is a detailed response from TOBIN Consulting Engineers to An Bord Pleanála regarding the Galway Harbour Extension project. It addresses concerns raised by the National Parks and Wildlife Service (NPWS) about the compensatory measures proposed for the project. Key points include:

- Scale of benefits that will arise from some measures
- Precise legal arrangements to be implemented to ensure long-term effectiveness and sustainability
- Whether CM were proposed in relation to the adverse effects that will arise solely as a result of the proposed development, or in combination with earlier habitat loss

5.2.1 Compensatory Measures

The measures include additional land at Tawin West and adjustments to previous proposals. The response package includes a detailed plan, environmental benefits, and an addendum to the Natura Impact Statement.

The compensatory measures involve 17.790 hectares of intertidal habitat at Mweeloon and 0.844 hectares of stony bank at Tawin West. The implementation of the Compensatory Measures Plan will be overseen by Galway City Council, with annual reports and meetings involving relevant stakeholders, including NPWS.

The document includes technical responses to NPWS's queries on various topics, including the scope of measures, perennial vegetation of stony banks, reef and mud and sand flats, Atlantic salt meadows, and long-term site management.

A technical note on the flood defences and coastal processes at Lurgan Island and Mweeloon Lagoon is included, highlighting the need for careful consideration of management measures to protect the habitats from flood risk.

Surveys at Tawin West indicate a high cover of negative agricultural/weed species, and management options such as reduced grazing intensity and turf stripping are proposed to improve the habitat.

Confirmation of land purchase agreements for the compensatory areas is provided by Blake & Kenny Solicitors. This gives assurance that GHC will have the right to apply the agreed compensatory measures.

The document aims to ensure that the compensatory measures are adequate to protect the overall coherence of the Natura 2000 network and address the environmental impacts of the Galway Harbour Extension project.

5.3 Appendix I-2 Compensatory Measures Plan, Accompanying Measures and Additional Environmental Benefits (July 2022)

This is a detailed, comprehensive report of the nature, extent and location of the Proposed Compensatory Measures (PCMs) and Accompanying Measures (AMs). The document also explains the different stages in which both sets of measures have been evolving. It includes maps of compensatory areas, showing different substrata, habitats, ecological communities and biotopes, both in Tawin Island and Mweeloon.

Appendix I-2 also describes the actions that will be undertaken by the GHC to supplement the PCMs. These were designed to compensate for the potential residual impacts to QIs of the Galway Bay Complex SAC arising from the proposed development. The objectives of the PCMs are to contribute to the achievement of the Conservation Objectives set for the Qualifying Interests for which the SAC is designated and ensure the overall coherence of the Natura 2000 network.

The proposed actions, termed Accompanying Measures (AMs), are summarised in Section 1.3 and detailed in full in Part 3. These AMs will help manage pressures affecting the habitats and improve the Conservation Status of the habitats area at Mweeloon and Tawin West.

The historic development of the Galway Harbour Enterprise Park (GHEP) in the mid-1990s resulted in the loss of some areas of Intertidal, stony bank and salt marsh habitats. The areas of habitat lost due to the GHEP are:

- 8.580ha of Intertidal habitat,
- 7.390ha of salt marsh, and

• 0.280ha of stony bank.

Adjacent to the compensatory areas, the following accompanying habitat areas are put forward to address these historic losses:

• 9.541ha of Intertidal habitat at Mweeloon which equates to a ratio of 1.11: 1 (i.e. 9.541ha: 8.580ha)

• 14.468 ha of salt marsh habitat at Mweeloon and at Tawin West which equates to a ratio of 1.96: 1 (i.e. 14.468ha: 7.39ha), and

• 0.280ha of stony bank at Tawin West which equates to a ratio of 1:1 (i.e. 0.280ha: 0.280ha, without counting the 3.111ha of stony bank habitat at Mweeloon).

The PCMs and AMs were also designed to provide additional environmental benefits in the Tawin and Mweeloon areas.

Section 2.1.4 (Page 37) refers to removal of oyster trestles and stopping tractor circulation in an intertidal area in Mweeloon (Objective 2).

An intertidal infaunal benthic monitoring programme is proposed to assess changes in sediment characteristics, faunal diversity measures and Infaunal Quality Index Ecological Status. This will allow comparison of 'before and after' conditions. While this is in my view a correct approach, it is not entirely clear how the "success of this aspect of the CMs" (page 37, last paragraph) is defined – as the "stabilisation" (of the benthic fauna at the fallow sites and on the former access routes in comparison to what is present at the active aquaculture site and access route). Benthic fauna community parameters (abundance, diversity, etc.) are subject to natural fluctuation over short (seasonal) and long periods of time. The success criteria must be defined, perhaps in terms of a combination of sediment chemical quality and biological (benthic) indices. I would like to emphasise the need to improve the methodology used for macrobenthic sampling and data analyses to ensure appropriate and reliable information on the ecological status of these intertidal habitats and biological communities. This requires conclusive results, and the survey design must consider the data requirements for comparing 'before and after' key indicators.

5.3.1 Section 2.3 Compensatory measures assessment matrix (page 47)

Table 2.5 is useful as a summary of answers to the criteria outlined by the European Commission (2001) in relation to projects significantly affecting Natura 2000 sites. However, it does not make the best possible use of the information, and in some parts, it falls short in terms of directness and certainty. For example, in question 4 "Do these measures address, in comparable proportions, the habitats and species negatively affected? The answer provided in the table does not directly address the question.

The reply should have been that the CM do address the habitats and species negatively affected in a proportion not only comparable, but also applied to larger areas of the affected habitats, including measures conducive to improve biodiversity in the intertidal habitats, such as control of the invasive *Didemnum sp*. and reduction of nutrient runoff.

The answer to Question 5 - How would the compensatory measures maintain or enhance the overall coherence of Natura 2000? does not exactly address overall coherence. 'Coherence' refers to the level of connectivity among habitats and ecological processes, including function and structure of the intended protected features – in this case, the qualifying habitats of Galway Bay Complex SAC. The CMs will have a positive effect on parts of these features (intertidal and stony bank habitats), thus enhancing overall coherence as a result of a more biodiverse, less organically rich and less disturbed intertidal habitats. This will to some extent return those habitats to conditions closer to those existing before impacts caused by nutrient enrichment and habitat damage as a result of aquaculture and agricultural practices.

5.3.2 Accompanying measures (AMs)

5.3.2.1 Salt marsh and stony bank habitats

The accompanying measures for the above habitats consist of management of land that has been acquired by GHE. The objective of the Land Management Plans is to improve the status of salt marsh habitat 1330 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and 1220 - stony bank habitats at Mweeloon and salt marsh habitat 1330 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) at Tawin West. The success of the AMs will be determined by meeting a number of targets set by NPWS (Conservation Objectives: Galway Bay Complex, detailed in Table 3.1, Page 56).

Results from monitoring studies, including detailed hydrodynamic and sediment transport modelling and sediment quality, management of sea defences – in relation to maintaining the tidal influence on vegetation habitats – will be submitted to the planning authority and NPWS and the DHGLG for approval and to allow them to prioritise on the use of management options (table 3.2, item 16, page 60).

5.3.2.1 Intertidal habitats

Accompanying habitat areas are proposed to address these historic losses:

• 9.541ha of Intertidal habitat at Mweeloon which equates to a ratio of 1.11: 1 (i.e. 9.541ha: 8.580ha)

• 14.468 ha of salt marsh habitat at Mweeloon and at Tawin West which equates to a ratio of 1.96: 1 (i.e. 14.468ha: 7.39ha), and

• 0.280ha of stony bank at Tawin West which equates to a ratio of 1:1 (i.e. 0.280ha: 0.280ha, without counting the 3.111ha of stony bank habitat at Mweeloon).

5.3.2.2 Part 4. Additional Environmental Benefits

As a result of the compensatory and accompanying measures, 19.516ha of priority lagoonal habitat will be enclosed and protected by agriculturally controlled lands and preserved free from aquaculture and free of *Didemnum sp.* by the GHC; ownership of the land is of significant additional ecological and conservation interest. The estimated extent of 265.5ha of lagoonal habitat at Tawin Island, is of high National interest as it adds 10.9% to the overall area of the habitat on a national scale.
The CMs and AMs have the potential to improve two other EU Annex I habitats, Limestone Pavement (Habitat code 8240) and Salicornia (Habitat code 1310), and some locally rare plant species.

5.4 Annex I-3: 2022 Addendum to NIS to include consideration of the compensatory measures, accompanying measures and environmental benefits

This Annex provides a summary of the historical overview of the application process and the decisions made by the Board and GHC regarding articles 6(3) and 6(4) of the EU Habitats Directive, including the application of IROPI and the design, application and monitoring of compensatory measures and accompanying measures.

It also considers whether the Compensatory Measures and Accompanying Measures proposed for the GHE project and presented in the Compensatory Measures Plan dated 13/05/2022, alone, or in combination with other projects or plans and in particular the development and operation of the GHE of which these compensatory measures form part, will have adverse effects on the integrity of a European site.

The addendum includes mitigation measures necessary to avoid, reduce or offset negative effects. It should be noted that the CMP also includes detail of Additional Environmental Benefits that will be derived from the Compensatory Measures activity. The Additional Environmental Benefits will result in positive effects on the surrounding environment and are described further in this assessment.

5.5 Section 4: Stage 1 Screening for Appropriate Assessment

This includes detailed, thorough description of terrestrial, coastal and lagoonal habitats in Mweloon and Tawin West, and their biological communities.

The AA concludes that the proposed CMs and AMs will not have an adverse impact on the qualifying features of Galway Bay Complex SAC. Based on the information provided in the NIS Addendum, I agree with this conclusion.

5.5 Conclusions

The comparison of new survey results with previous data confirm that earlier conclusions remain valid. As a result, the earlier conclusion that the proposed development with appropriate mitigation measures will not have significant adverse effects on the environment remains valid.

The 2024 NIS Addendum adequately identifies all the designated sites and all their QIs that could be adversely affected by the Galway Harbour extension. Based on the above analysis, and having regard to EU Guidance on the matter, the 2024 NIS Addendum concludes that the proposed development is unlikely to affect the integrity of a European Site. This (integrity) is defined (EC, 2018) as the coherent sum of the site's ecological structure, function and ecological processes, across the whole area, which enables it to sustain the habitats, complex of habitats and populations for which the site is designated.

The proposed compensatory measures – including accompanying measures – are adequate to protect the overall coherence of the Natura 2000 network and address the environmental impacts of the Galway Harbour Extension project.

In my opinion, there is now a consistent base of evidence supporting the conclusions relevant to the matter – i.e. that the proposed CMs and associated or complementary CMS etc. address, in comparable proportions, the habitats and species negatively affected and that they will maintain and enhance overall coherence.

6. Representations

6.1 Representation from An Taisce

The first six sections of this representation discuss climate change, the potential effects of the GHE construction and operation on CO_2 emissions and climate, and the logistical and strategic need of this project. These are outside the scope of my brief, and I shall not comment on this subject. However, it is stated in the conclusions that it is not evident that the studies to date have considered the adverse effects of future coastal storm events, surges and raising sea levels. I disagree with this opinion, as I believe that these issues have been addressed in Chapter 8 the EIS and the EIS Addendum.

An Taisce consider that the proposed areas for CMs should already be conserved in accordance to best practice for SACs, and therefore they do not need CMs for their conservation. Whilst this is correct, it seems that there is some confusion in relation to conservation and compensation, and the nature and objectives of the CMs. These are not to conserve the current status of these habitats and their biological communities, but to enhance these, and improve their current status. CMs and AMs have been proposed, discussed and accepted to maximise the contribution to ecological function and ecosystem services that they provide. Furthermore, it must be taken in consideration that even in the absence of human intervention or impact, ecosystems, habitats and biological populations are subject to natural changes over time.

I understand that these considerations have been discussed and decided through the IROPI process, following EU and national legislation and guidance. For this reason, I do not consider that the CMs and AMs need further discussion at this stage.

The representation also refers to the need for specific, measurable metrics to ensure the effectiveness of the CMs and AMs. I agree that this is necessary. The success of the AMs will be determined by meeting a number of targets set by NPWS.

6.3 Representation from the Department of Housing, Local Government and Heritage

The Department of Housing, Local Government and Heritage reviewed the Natura Impact Statement (NIS) and subsequent Addenda/Errata documents. The Department considers that no significant changes were found in the environmental impact assessments, and the conclusions of the original NIS remain valid.

The updated surveys confirm no additional significant impact to Galway Bay SAC. The document outlines the procedural steps and environmental assessments related to the

proposed extension of Galway Harbour, ensuring compliance with conservation objectives and legislative requirements.

6.4 Representation from Inland Fisheries Ireland

Inland Fisheries Ireland (IFI) express concern on water quality issues in relation to the EU Water Framework Directive (WFD, 2000/60/EC), with emphasis in maintaining the current (‘Good’) ecological status of the River Corrib and addressing the "Moderate" status of the Corrib Estuary. IFI highlights that fish are also relevant for the WFD classification – in addition to water quality. This is correct.

Impact on Fish: Concerns about the potential impact on diadromous fish species, including Atlantic salmon, sea trout, European eel, and sea lamprey, due to subsea noise and changes in migration routes. This is a valid concern, and the potential adverse impacts of underwater noise and vibration have been addressed through impact avoidance and mitigation measures discussed in previous stages.

6.5 Galway Bay Inshore Fishermen's Association

Mr. Vincent Connell, on behalf of the Galway Bay Inshore Fishermen's Association, submitted objections to the proposed Galway Harbour development. The objections highlight concerns about the environmental and economic impact on local fishermen, particularly those dependent on the shrimp pot fishery. Mr. Connell criticises the proposed compensatory measures in Mweeloon Bay, arguing they are ineffective and do not address the significant loss of income for fishermen. He also questions the authority of the Galway Harbour Company to implement certain measures and points out their lack of involvement in local environmental activities.

These legitimate concerns were discussed and addressed during the previous stages of the planning application.

7. References

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