

An Bord Pleanála Oral Hearing

Irish Water

Greater Dublin Drainage

Brief of Evidence

Natura Impact Statement

James McCrory

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Qualifications and Role on the Proposed Project

- 1 My name is James McCrory. I am a Senior Associate in RPS. I hold a Bachelor of Arts degree in Plant Science from the University of Dublin, Trinity College and a Master of Science degree with Distinction in Habitat Creation and Management from Staffordshire University. I am a Chartered Ecologist and Chartered Environmentalist with the Chartered Institute of Ecology and Environmental Management; and a Chartered Biologist with the Royal Society of Biology.
- 2 I have over 17 years' experience managing ecological survey and assessment contracts as part of Environmental Impact Assessment Directive and Habitats Directive assessment processes. I have undertaken ecological survey and assessment and prepared biodiversity chapters of Environmental Impact Assessment Reports (EIAR), Appropriate Assessment screening reports and Natura Impact Statements (NIS) for a range of projects involving dredging and discharges to the marine environment including a number of significant coastal development projects in Dublin Port and Dublin Bay, Cork Harbour, Belfast Lough, Carlingford Lough and in the Shannon Estuary.
- 3 I have been involved in the project since 2011 and have advised Fingal County Council initially, and subsequently, Irish Water on ecological constraints since phase one of the project which considered alternative sites for the proposed Wastewater Treatment Plant throughout North County Dublin. My involvement culminated in the preparation of the terrestrial component of the biodiversity chapter of the EIAR, and review of the NIS submitted to An Bord Pleanála in June 2018. I have also inputted on the biodiversity issues to a subsequent Response to Submissions Document which was issued to An Bord Pleanála in January 2019.
- 4 The NIS was prepared with the benefit of inputs from a number of ecology specialists; it was a collaborative effort as multiple specialist ecology skill sets were required to fully assess the potential effects. Specialist inputs to the NIS were provided by Ian Wilson, marine biodiversity expert; Dr Simon Zisman, ornithology expert. This is explained in Section 1.4 of the NIS.
- 5 Ian Wilson and Dr Simon Zisman have prepared a precis of evidence on their respective areas of expertise for this hearing to assist the Board address issues arising in the Habitats Directive assessments to be carried out by the Board. The evidence of Ian Wilson deals with the specific assessments on marine biodiversity features which are also qualifying interests of candidate Special Areas of Conservation (cSACs) or wetland habitats of Special Protection Areas (SPAs). The evidence of Dr Simon Zisman deals with the specific assessments on ornithological biodiversity features which are also special conservation interests of SPAs.

Relevant Natura Impact Statement References

- 6 Sections 1 and 2 of the NIS comprise an introduction to the Proposed Project and the methodology applied to the assessment and the zone of influence of the Proposed Project. Section 3 of the NIS describes the Proposed Project itself.
- 7 The document then sets out a two-stage approach to the assessments to be carried out by the Board, as competent authority under Article 6(3) of the Habitats Directive:
 - The first part of this procedure consists of a screening stage (Section 4 of the NIS) to determine whether, firstly, the project is directly connected with or necessary to the management of any European site, and secondly, whether it is likely to have a significant effect on any European site;
 - The second part of the procedure relates to an Appropriate Assessment as to whether or not a project would adversely affect the integrity of any European site (Section 6 of the NIS).

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- 8 The Proposed Project has been assessed both alone and in combination with other plans and projects (Section 6.5), and with respect to the structure and function and conservation objectives of the European sites considered, in light of best scientific knowledge (Section 5).
- 9 In this regard, the NIS is supported by a number of specialist scientific reports including an ornithology technical report, a reef assessment report, a marine mammal survey report and an underwater noise modelling report. It also considers the outputs of airborne noise modelling at microtunnelling compounds and water quality modelling of suspended sediment plumes and operational discharges.

Stage 1 Screening Assessment

- 10 Section 4 of the NIS sets out a screening stage appraisal. It was completed in compliance with relevant European Commission and national guidance to determine whether it can be excluded, on the basis of objective information, that the Proposed Project, individually or in combination with other plans or projects, will have a significant effect on a European site.
- 11 22 no. European sites were considered in the screening for appropriate assessment exercise, as illustrated in Figure 1-1 of the NIS and listed in Table 4-2 of the NIS. This table from the NIS is reproduced at the end of this evidence at Appendix 1
- 12 In accordance with European Commission guidance '*Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*' and the judgment of the Court of Justice of the European Union (CJEU) in case C-323/17 (People over Wind), measures intended to avoid or reduce the harmful effects of the proposed development on European sites were not taken into account at the screening stage appraisal.
- 13 From the findings of the screening stage appraisal, it was concluded that:

- the project is not directly connected with or necessary to the management of any European site;
- it could not be excluded, on the basis of objective information, that the project, individually or in combination with other plans or projects, will have a significant effect 7 no. cSACs and 11 no. SPAs as described in Table 4.3 of the NIS and listed below –

screened in	{	1. Baldoyle Bay cSAC	1. Baldoyle Bay SPA
		2. Rockabill to Dalkey Island cSAC	2. Ireland's Eye SPA
		3. North Dublin Bay cSAC	3. Howth Head Coast SPA
		4. Malahide Estuary cSAC	4. Malahide Estuary SPA
		5. South Dublin Bay cSAC	5. North Bull Island SPA
		6. Lambay Island cSAC	6. South Dublin Bay and River Tolka Estuary SPA
		7. Rogerstown Estuary cSAC	7. Rogerstown Estuary SPA
			8. Lambay Island SPA
			9. Dalkey Island SPA
			10. Skerries Islands SPA
			11. Rockabill SPA

- It could be excluded, on the basis of objective information, that the project, individually or in combination with other plans or projects, will have a significant effect the remaining European sites identified in the wider study area as described in Table 4.3 of the NIS and listed below –

screened out	{	1. Ireland's Eye cSAC
		2. Howth Head cSAC
		3. Glenasmole Valley cSAC
		4. Rye Water Valley/Carton cSAC

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- 14 Having regard to the methodology employed and the findings of the screening stage exercise, it was concluded that a Stage 2 appropriate assessment of the implications of the project on European sites was required, in view of their conservation objectives and in combination with any other relevant plans or projects. As such, a NIS was prepared and submitted to the Board with the application for development consent.

Stage 2 Assessment

- 15 The NIS (at Section 6) considered the likely significant effects not excluded at the screening stage that would have the potential to adversely affect the integrity of the European sites concerned; with regard to the qualifying interests and conservation objectives of those sites. It is a scientific examination of evidence and data, carried out by competent experts in their fields, to identify and classify any implications for a number of European site in view of their conservation objectives.
- 16 The NIS discuss each of the 18 European sites listed at paragraph 13 above under one or more of the following four impact pathways as identified in the screening assessment:
- Airborne noise and visual disturbance;
 - Water quality and habitat deterioration;
 - Underwater noise and disturbance; and
 - Habitat loss.

Airborne Noise and Visual Disturbance

- 17 For Baldoyle Bay SPA, it was concluded that noise produced during piling of the jacking shaft at the microtunnelling compounds will be at a sound power level of sufficient magnitude to potentially trigger disturbance. Having considered each of the qualifying species, it was determined that the conservation objectives for Light-bellied Brent Goose, Shelduck and Golden Plover could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 18 For Ireland's Eye SPA, it was concluded that disturbance and displacement of these birds using marine areas could occur during construction of the outfall pipeline and marine diffuser as a result of dredging vessels, a jack-up pipe laying vessel and associated support vessels; and also piling at the microtunnelling/subsea interface and fibre optic cable. The conservation objectives for Guillemot and Razorbill could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 19 For the remaining European sites listed in paragraph 13 above, it was concluded that the project will not adversely affect the integrity of these European sites as a result of airborne noise and visual disturbance and that no reasonable scientific doubt remains as to the absence of such effects.

Water Quality and Habitat Deterioration

- 20 For Baldoyle Bay cSAC, it was concluded that the conservation objectives for the Annex I mudflats and sandflats and three saltmarsh habitats could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 21 For Rockabill to Dalkey Island cSAC, it was concluded that the conservation objectives for the Annex I reef habitat could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.

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- 22 For the remaining European sites listed in paragraph 13 above, it was concluded that the project will not adversely affect the integrity of these European sites as a result of water quality and habitat deterioration, and that no reasonable scientific doubt remains as to the absence of such effects.

Underwater Noise and Disturbance

- 23 For Rockabill to Dalkey Island cSAC, it was concluded that the conservation objectives for Annex II harbour porpoise community could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 24 For Lambay Island cSAC, it was concluded that the conservation objectives for Annex II harbour seal and grey seal populations could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 25 For the remaining European sites listed in paragraph 13 above, it was concluded that the project will not adversely affect the integrity of these European sites as a result of underwater noise and disturbance, and that no reasonable scientific doubt remains as to the absence of such effects.

Habitat Loss

- 26 For Baldoyle Bay cSAC, it was concluded that the conservation objectives for the three Annex I saltmarsh habitats could potentially be undermined in the absence of measures intended to avoid or reduce the harmful effects of the proposed development.
- 27 For the remaining European sites listed in paragraph 13 above, it was concluded that the project will not adversely affect the integrity of these European sites as a result of habitat loss, and that no reasonable scientific doubt remains as to the absence of such effects.

In Combination Effects

- 28 Twelve other developments are considered for their potential to result in cumulative effects, as described in Table 6.11 of the NIS (and replicated below, for ease of reference).
- 29 It was concluded that there is the potential for cumulative water quality effects as a result of release of suspended sediment or contaminated run off during construction of any of the other projects into the same catchments traversed by the GDD project.
- 30 It was also concluded that there is the potential for cumulative disturbance or displacement effects on feature species of Baldoyle Bay SPA effects as a result of airborne noise or visual disturbance during construction of the Station Manor Portmarnock housing development or Sutton to Malahide Greenway.
- 31 It was concluded that there is no possibility of cumulative effects as a result of any other impact pathway.

Mitigation

- 32 Mitigation measures were incorporated into the Stage 2 assessment and are described in Section 7 of the NIS. They include design-stage avoidance measures and Construction Phase reduction measures intended to prevent the predicted adverse effects of the project described in paragraphs 16 – 30 above, on European sites.

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Conclusion of the Habitats Directive Appraisal

- 33 The NIS concludes at Section 8 that with the implementation of the prescribed mitigation measures the project will not adversely affect the integrity of any European site, either individually or in combination with other plans and projects and no reasonable scientific doubt remains as to the absence of such effects.
- 34 To eliminate adverse effects on light-bellied brent goose, shelduck and golden plover, in Baldoyle Bay SPA a 2.4m high hoarding will be used for the duration of the construction works at both microtunnelling compounds no's. 9 and 10.
- 35 To eliminate adverse effects on auks in Ireland's Eye SPA a Vessel Management Plan has been prepared and is contained at Appendix F to the NIS. It stipulates that:
- all vessels associated with the project do not unnecessarily approach, and never cross the boundary of and stray into Ireland's Eye SPA when working on the project, unless there is a risk to human safety in not doing so; and
 - in the months of July and August, a ornithological observer will monitor and observe the distribution of flightless, rafting auks on the water that are attempting to leave the colony at the end of the breeding season, and have sufficient authority to instruct vessels to reposition if auks are travelling towards the vessels.
- 36 To eliminate adverse effects on Annex I habitats in Baldoyle Bay cSAC, discharges to the estuary are not permitted and measures to manage water quality as specified in the CEMP and allied Surface Water Management Plan will be applied throughout construction phase. In addition, continual monitoring and management of drill mud pressures during drilling activities shall occur. In the event of bentonite breakout in saltmarsh areas, intervention by mechanical recovery or washing will occur.
- 37 To eliminate adverse effects on reef habitat in Rockabill to Dalkey Island cSAC, dredging discharges from the hopper will be restricted to flooding tides only and turbidity will be monitored using a buoy mounted turbidity meter telemetered back to the dredger to monitor potential impacts from dredging activity. TSS up to 40mg/l above background will be permitted off Ireland's Eye northern coastline. If levels increases above this threshold as a result of dredging activity, then the discharge of material will be temporarily halted to allow the resulting plume to disperse.
- 38 To eliminate adverse effects on reef habitat and harbour porpoise in Rockabill to Dalkey Island cSAC, and the seal populations in Lambay Island cSAC, passive acoustic monitoring devices will be deployed and marine mammal observers will implement the 2014 NPWS guidance as follows:
- A trained and experienced Marine Mammal Observer (MMO) will be put in place during piling, dredging and pipeline laying.
 - The MMO will scan the surrounding area to ensure no marine mammals are in a pre-determined exclusion zone (500m for dredging activities and 1,000m for piling activities) in the 30-minute period prior to operations.
 - No works will take place should mammals be recorded in the exclusion zone.
 - Noise-producing activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved.
 - Where effective visual monitoring is not possible, the sound-producing activities shall be postponed until effective visual monitoring is possible, as visual mitigation for marine mammals (in particular harbour porpoise) will only be effective during daylight hours and if the sea state is 2-3 (Beaufort scale) or less.

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- For piling activities, where the output peak sound pressure level (in water) exceeds 170dB, a ramp-up procedure must be employed following the pre-start monitoring.
- Underwater acoustic energy output shall commence from a lower energy start-up and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes.
- Once operations have begun, operations will cease temporarily if a cetacean or seal is observed swimming in the immediate (<50m) area of piling and dredging and work can be resumed once the animal(s) have moved away.
- Any approach by marine mammals into the immediate (<50 m) works area shall be reported to the National Parks and Wildlife Service.
- If there is a break in piling activity for a period greater than 30 minutes then all pre-activity monitoring measures and ramp-up shall recommence as for start-up.
- Once normal operations commence (including appropriate ramp-up procedures), there is no requirement to halt or discontinue the activity at night-time, nor if weather or visibility conditions deteriorate, nor if marine mammals occur within a radial distance of the sound source that is 500m for dredging works, and 1000m for piling activities.
- The MMO will keep a record of the monitoring using "MMO form location and effort (coastal works)" and submit this record to the NPWS within one month of completion of the relevant activities, as described in the NPWS guidance (2014).
- In order to reliably quantify the zone of responsiveness associated with the proposed programme of piling activities associated with the interface pit or cable crossing, a vessel deployed hydrophone will be used to confirm the sound source level of the operation.
- Additionally passive acoustic monitoring will be used to provide additional support to the identification of harbour porpoises or other cetaceans within the survey area. The effective range of the PAM system will be dictated by the frequency with the ultra-high frequency used by porpoises likely to be limited to within 500m of the PAM system.

Response to Issues Raised in Submissions/Observations

39 Responses to submissions and observations made by Third Parties and Prescribed Bodies in relation to the assessment of marine biodiversity qualifying interests of cSACs or wetland habitats of SPAs are set out in paragraphs 20- 67 of the Evidence of Ian Wilson. The general issues raised fall under the following categories:

- potential impact on cSACs and SPAs and associated protected species;
- potential impact of malfunction and release of untreated wastewater on marine ecology;
- potential impact on harbour porpoise;
- potential impact on fish species; and
- potential impact of tunnelling on marine ecology.

The specific Issues raised relate to:

- dredging and sediment impact on reefs;
- potential impact of the construction phase and operational phase on harbour porpoise;
- impact of microtunnelling under Baldoyle Bay and impact to the saltmarsh;
- impact of bentonite leak;
- disturbance to wildlife via impacts on food sources;

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- eutrophication impacts on the estuarine system;
- operational phase discharges following malfunction.

40 Responses to submissions and observations made by Third Parties and Prescribed Bodies in relation to the assessment of ornithological biodiversity special conservation interests of SPAs are set out in paragraphs 24-49 and 66-77 in the Evidence of Dr Simon Zisman. The general issues raised fall under the following categories:

- effects on SPAs and protected bird species;
- effects on seabird colonies from the proposed outfall pipeline route (marine section);
- effects of malfunction on bird species;
- effects of tunnelling on estuarine birds;

The specific Issues raised relate to:

- effects on Light Bellied Brent Geese;
- potential impact on Irelands Eye;
- potential impact on Baldoyle Bay;
- potential cumulative impacts on Brent Geese and Waders and possible disturbance to SPA Birds.

Potential Effects on cSACs and SPAs

41 The issue of potential effects on the qualifying interests of European sites are addressed in the Stage 1 and Stage 2 Habitats Directive appraisals in the NIS.

Response to cSAC Issues in Submissions

Potential Impact of Malfunction and Release of Untreated Wastewater on Marine Ecology

42 Following evidence presented by Ciarán O’Keeffe relating to the likelihood of a significant malfunction at the processing plant, the possibility of an uncontrolled release of untreated wastewater into the marine environment is a negligible risk.

43 An additional assessment was modelled for an extreme event where the concentration of suspended sediment was increased for a 3 day discharge of 300mg/l. Results indicated that pumped wastewater would continue to show a rapid dilution on discharge and create only a very localised plume. There would be no additional significant effects upon the qualifying interests of the European sites in this scenario over and above those assessed for a routine operational scenario.

44 Marine mammals are routinely recorded in areas of high suspended sediment, whilst the hydrodynamic model indicated that this small suspended sediments plume would quickly disperse and flow away from the diffuser in a seaward direction, away from designated reefs located on Ireland’s Eye.

Potential Impact to Fish Species

45 The findings of the hydrodynamic model indicate that the nutrient enrichment levels anticipated, and the modelled rate of dispersion offshore, will not result in any significant effect on fish and shellfish populations both locally and regionally. As a result, there will not be any likely significant effects upon the qualifying interests of the European sites.

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Potential Impact of Tunnelling on Marine Ecology

- 46 The use of micro tunnelling has been proposed to avoid direct impact on Baldoyle Bay and to preserve this environment within its current state. The use of this type of construction technology is well understood. The potential effects are discussed in Section 6.2 of the NIS. Effective mitigation is proposed and this technique will not adversely affect the integrity of a European site.

Compliance with NPWS Guidelines for Marine Mammals in Irish Waters

Submission

- 47 The submission from the Development Applications Unit asserts that the '*proponent*' must ensure that the Operational Phase mitigation is in compliance with current NPWS guidelines for marine mammals in Irish Waters.

Response:

- 48 It is confirmed on behalf of Irish Water that operations will be carried out in compliance with "*Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters*" (NPWS 2014) as specified at paragraph 38 above.

Dredging and Sediment Impact on Reefs

Submission:

- 49 The submission¹ raised issues regarding the existing impact of sediment on reefs along the coast of Ireland's Eye in the Rockabill to Dalkey Island cSAC and the further impact dredging will have to these reefs.

Response:

- 50 This has been assessed in Section 6.2.2.3 of the NIS and showed no impact predicted to either the littoral and sublittoral reef features recorded within the cSAC. Mitigation measures are presented in Section 7.4 of the NIS, which include managed spoil discharge and real-time monitoring of turbidity close to the reef with further operational alterations in the event that unacceptably elevated levels were observed. A detailed assessment of the subtidal reefs carried out in 2015 identified that the biological diversity in the area had not been significantly impacted by naturally high siltation levels.

- 51 Accordingly, there will be no adverse effect on the reefs along the coast of Ireland's Eye in the Rockabill to Dalkey Island cSAC as a result of dredging associated with the Proposed Project.

Potential Impact of the Construction Phase and Operational Phase on Harbour Porpoise

Submission:

- 52 Three submissions² suggested that the impacts of noise from dredging and tunnelling on harbour porpoise were not fully considered (Section 10.3.3 and 10.3.10 of the January 2019 Response to An Bord Pleanála and perceived possibility that the discharge during operation will impact on the harbour porpoise (Section 10.3.2 of the Response).

¹ Councillor David Healy

² Velvet Strand Sea Swimmers and Beach Users, Sabrina Joyce Kemper, Peadar Farrell

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Response:

- 53 The impacts of noise from dredging and tunnelling on harbour porpoise were fully considered in Section 6.3 of the NIS and issues in relation to the discharge during operation impacting on the harbour porpoise were also fully considered at Section 6.2 of the NIS.
- 54 The prevalence of harbour porpoises, along with other marine mammals were assessed following an extensive monitoring survey between 2015 and 2017 using both acoustic and observational techniques in the vicinity of the proposed development as outlined in Section 5.1.6 of the NIS. Results showed some of the highest densities recorded in Ireland and moderate levels of activity throughout the year with numbers reduced during late spring/early summer, possibly due to animals migrating more offshore prior to calving, before increasing again in late summer.
- 55 Mitigation measures are proposed using passive acoustic monitoring and marine mammal observations to limit proximity of animals during high noise construction operations (i.e. piling). Further restriction of high noise operations to outside peak population periods will also reduce any potential minor impact within the cSAC itself.

Construction

- 56 The impact and spread of a dredging plume is discussed in Section 6.2 of the NIS. The spread of the sediment plume remains relatively limited to approximately 500m to 600m either side of the dredging operation with concentrations recorded below 100mg/l. The occurrence of the plume is a temporary event, and the size of this plume within the cSAC is negligible compared to the total area of the cSAC, with the harbour porpoise expected to show a simple avoidance reaction if a plume is encountered. As an inshore species, the harbour porpoise is regularly encountered in areas of high turbidity throughout the British Isles and will be unaffected by this material.
- 57 The impacts of construction on the harbour porpoise from noise associated with tunnelling, piling and dredging are detailed in Section 6.3 of the NIS. Examples and literature datasets were discussed. The effect on harbour porpoises from tunnelling and dredging and piling were assessed, and mitigation is proposed in accordance with NPWS (2014) guidelines as specified at paragraph 38 above. These noise producing activities will not adversely affect the integrity of a European site.

Operation

- 58 Section 6.2 of the NIS describes the impact of the plume to the surrounding waters during the Operational Phase, and the dilution rates and area of plotted plume dispersion are discussed in detail in the evidence of Alan Berry on Marine Water Quality. Significant dispersion rates are expected in the near field mixing zone and the water quality is expected to maintain an 'excellent' water quality status set out for 'coastal' waters and as set out in the WFD for 'Surface Waters. These rates of dispersion will effectively prevent adverse effects upon marine qualifying interests of the cSACs considered in the assessment.
- 59 A model of the discharge during the operational period of the outfall describes a high water-quality standard that will be maintained during the discharge along with the expected performance of the discharge into the receiving waters at all states of the tide. The multiport diffuser is located in a moderate water depth of approximately 23m. The model indicated a high natural dispersion rate and a low physical plume impact throughout the year. Simulations over the full tidal cycle for both neap and spring tidal scenarios, indicating consistently high dilution rates and a dominant migration of the discharge out to sea.
- 60 Whilst the plume from the operational effluent discharge is located within the cSAC, the final concentration of suspended sediments predicted during the operational phase will be below that detectable by this Annex II species and there will be no impact to this qualifying interest. Again, the qualifying interest of Annex II

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species found in Rockabill to Dalkey Island cSAC will not be compromised, and there will be no adverse effect on the integrity of the site.

Impact of Micro tunnelling under Baldoyle Bay and Impact to the Saltmarsh

Submission:

- 61 Three submissions³ raised issues that tunnelling will impact on the wildlife at Baldoyle Bay and that the removal of materials offsite has not been considered.

Response:

- 62 Section 3 of the NIS describes the Proposed Project and gives details regarding the construction of the proposed temporary construction compounds for tunnelling and activities associated with micro tunnelling. All such activities have been considered in the NIS. The construction method for the proposed outfall pipeline route (marine section) has been designed to avoid any direct impact to the cSAC and to preserve this environment within its current state by constructing the outfall under the estuary using a micro tunnelling technique. The use of this type of construction technology is well understood with no potential impacts through noise, pollution and construction activities predicted in relation to disturbance on sensitive and qualifying species within the cSAC.
- 63 The hydrodynamic plume similarly shows that the discharged plume will not affect the Baldoyle Bay cSAC during the Operational Phase. Consequently, neither the qualifying features or the integrity of the cSAC will be compromised by the Proposed Project.

Impact of Bentonite Leak

Submission:

- 64 One submission⁴ stated that a bentonite leak has the potential to impact on estuarine habitats.

Response:

- 65 The use of bentonite is tightly controlled during micro tunnelling processes minimising the magnitude of a release should it occur. Section 6.2.1 of the NIS addresses the potential for a bentonite breakout during micro tunnelling beneath the Baldoyle cSAC. This concluded that, whilst the risk of a breakout cannot be completely avoided, the probability of it occurring is very low, the temporal scale of possible contamination to the site from a surface bentonite release was deemed to be very short-lived. Bentonite drilling fluid is naturally occurring and non-toxic to marine fauna, although it can occasionally cause smothering impacts if discharged in large quantities. A release of bentonite may marginally increase the levels of some chemical components such as metals on surface sediments in the vicinity of the discharge and introduce a small quantity of suspended clay into the watercourse producing a localised plume effect. The NIS described the different habitats and dominant marine species that could be affected by an accidental release of bentonite with the risk-profile changing relative to the position of the release on the foreshore. Mitigation has been proposed for areas of release that would not be liable to high natural dispersion across a tidal cycle, such as high up on the shoreline, to reduce the effects. A bentonite leak will not adversely affect the integrity of Baldoyle Bay cSAC.

³ Peadar Farrell, Velvet Strand Sea Swimmers and Beach Users, Portmarnock Beach Committee

⁴ Sabrina Joyce Kemper

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Eutrophication Impacts on the Estuarine System

Submission:

- 66 One submission⁵ raised issues that the impact of the outfall discharge is not examined for Baldoyle Bay cSAC.

Response:

- 67 Hydrodynamic modelling and simulations of the predicted operational plume discharged into the receiving waters indicated consistently high dilution rates and a dominant migration of the discharge out to sea. Therefore, likely significant effects on inshore waters at Baldoyle Bay cSAC will not occur as a result of this activity.

Operational Phase Discharges following Malfunction

Submission:

- 68 One submission raised an issue regarding the impact of discharges on the reefs and harbour porpoises at Ireland's Eye as a result of a malfunction during operation.

Response:

- 69 As previously noted above, evidence presented by Ciarán O'Keeffe, has confirmed that there is no marine discharge during an operational failure so there would be no potential impact from a malfunction.
- 70 A hypothetical assessment modelled for an extreme event where the concentration of suspended sediment was increased for a 3 day discharge of 300mg/l indicated that pumped wastewater would continue to show a rapid dilution on discharge and create only a very localised plume (see Figure 1 included in the evidence of Ian Wilson). This indicated no significant impact to the marine ecology.

Response to SPA Issues in Submissions

- 71 In relation to effects on SPAs and protected species, potential effects on estuarine and marine birds are assessed in sections 4 and 6 of the NIS, drawing on extensive baseline data collected for the Proposed Project. Mitigation measures prescribed to offset potentially significant effects on estuarine and marine birds are set out at Section 7 of the NIS. The NIS concludes beyond reasonable scientific doubt that there is no adverse effect on the integrity of any SPAs from the Proposed Project, either alone or in combination with other plans or projects.
- 72 The effects of the proposed outfall pipeline route (marine section) on seabird colonies has been fully assessed. With the mitigation measures prescribed there is no significant impact predicted on any seabird colony. Due to the nature of the Proposed Project and its operation (which does not require the routine presence of significant surface activities in or near Baldoyle Bay or Ireland's Eye), there are no likely significant effects predicted on ornithological interests from the proposed outfall pipeline route (marine section) discharge during the Operational Phase. The significant effects of the Proposed Project have therefore been addressed, and no adverse effect on the integrity of any SPAs will occur.
- 73 In relation to the effects of a malfunction of the operational plume on birds, the very unlikely event of a malfunction and release of untreated wastewater, I refer to paragraphs 42-44 above and evidence presented by Ciarán O'Keeffe. There will be no significant effects on marine birds or their prey. These species have

⁵ Sabrina Joyce Kemper

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extensive foraging ranges, so any effect would occupy only a small fraction of their potential foraging area for a short time. Fish, as a key part of seabird prey, would also be able to disperse from any area of increased suspended solid, further reducing the risk of any effect.

- 74 In relation to the effects of tunnelling on estuarine birds, all sources and potential implications of disturbance from tunnelling activities have been fully addressed in section 6.1 of the NIS. Once the installation of suitable screening at each of the proposed temporary construction compounds is in place prior to construction adverse effect due to disturbance will not occur.

Effects on Light Bellied Brent Geese

Submission:

- 75 One submission raised specific issues regarding Light Bellied Brent Geese at Clonshagh. A second stated that the area of the proposed Wastewater Treatment Plant is a migration path for Brent Geese and this will cease if the Proposed Project goes ahead.

Response:

- 76 Survey work undertaken for the Proposed Project underpins our assessment that that there will be no impact on Light Bellied Brent Geese. In that regard, Section 5.1 of the NIS presents the type and number of field surveys that were undertaken. The NIS considers the potential effects on Light Bellied Brent Geese from airborne noise and visual disturbance (covered in section 6.1 of the NIS) and water quality (covered in section 6.2).
- 77 In both cases, using baseline data (in section 5.1.4, reflected for Light Bellied Brent Geese in Figure A10.2: Records in Baldoyle Bay (Dec 2014 to March 2018)) and taking account of the species' conservation objectives at Baldoyle Bay SPA (see extract from Table 6.1 below), it is concluded beyond reasonable scientific doubt, that mitigation (in the form of screening, and specified in section 7.1, and quoted above in paragraph 41) means there would be no adverse impact on the conservation objectives in relation to this (or any other species).
- 78 The NIS concludes (section 8) that: "Following the implementation of mitigation to reduce the impact of visual disturbance (screening around both microtunnelling compounds and access track; Section 7.1), no residual impact on the Baldoyle Bay SPA is predicted. On this basis it is concluded that the proposed development will not adversely affect the integrity of the above Baldoyle Bay SPA, having regard to the conservation objectives of the site".

Potential Impact on Irelands Eye

Submission:

- 79 Eight submissions raised issues that inadequate assessment was undertaken of the wildlife in the area surrounding Ireland's Eye⁶.

Response:

- 80 As part of the preparatory work for the NIS, the seabirds present on and around Ireland's Eye have been comprehensively examined, using a combination of desk studies and field work. This is in recognition of the ornithological interests present in the area. From the outset, the approach taken has therefore been to ensure

⁶ Barbara Delaney, Celia Herbert, Kayleigh Hone, Linda Brady, Residents of Newtown Court, Stacey Kelly, Stephanie Moore, and Strand Sea Swimmers and Beach Users

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a robust assessment of baseline marine birds and possible impacts of the outfall on these interests (with consideration of their habitats and the food-chain on which the seabirds depend).

- 81 Chapter 4 of the NIS considers whether or not the Proposed Project is likely to have significant effects on European sites in view of their conservation objectives, Chapter 5 of the NIS describes the scientific investigations that were undertaken to inform the Stage 2 Appropriate Assessment and Chapter 6 of the NIS contains an assessment of the implications of the Proposed Project on European sites. Chapter 7 of the NIS prescribes the necessary measures to avoid adverse effects upon European sites.
- 82 Drawing on the comprehensive survey data, detailed consideration has been given to the potential effects of construction and operation of the Proposed Project (proposed outfall pipeline route (marine section) and marine diffuser) on seabirds.
- 83 In light of the baseline bird interest on and around Ireland's Eye, and drawing on extensive experience of managing construction effects on seabirds, it is concluded that there will be no adverse effects on the integrity of any seabird SPAs.

Potential Impact on Baldoyle Bay

Submission:

- 84 Four submissions raised issues regarding the impact of the Proposed Project on Baldoyle Bay SPA, specifically the impacts from disturbance associated with proposed temporary construction compound no. 9 and no. 10 for microtunnelling (including noise and lighting) on roosting and foraging birds and the fact that the only mitigation proposed is to fence and shield these compounds⁷.

Response:

- 85 The predicted effects of the Proposed Project on Baldoyle Bay SPA were fully assessed in its NIS, using the appropriate assessment guidance set out in NIS section 4.1.1. Based on the description of the Proposed Project (Chapter 3), the Screening for Appropriate Assessment was undertaken and reported in Chapter 4. In-depth consideration of scientific evidence on the predicted effects of the Proposed Project was set out in Chapter 5 (Scientific Investigations to Support Appropriate Assessment) and the assessment of implications for Baldoyle Bay was provided in Chapter 6. For the appropriate assessment, consideration of mitigation was provided in Chapter 7 and the conclusion on the effects of the Proposed Project on Baldoyle Bay SPA given in Chapter 8. The conclusion was that there will be no adverse effects on the integrity of the SPA, noting in section 7.1 that:-

"To eliminate the compromise of conservation objectives on light-bellied brent goose, shelduck and golden plover, a 2.4m high hoarding will be used for the duration of the construction works at both microtunnelling compounds (no. 9 & 10). Compound construction cannot proceed without the installation of hoarding around the entire perimeter of each compound and any associated access track. The deployment of this hoarding will mean that works within the microtunnelling compounds will occur out of sight of birds in the Baldoyle Bay SPA, meaning that disturbance impacts on birds are reduced to a very low level (Cutts et al. 2013). Ikuta and Blumstein (2003) found that protective barriers allow birds to behave as they would in an undisturbed environment. To avoid disturbance to wintering birds, the hoarding can only be erected and uninstalled between April and August under supervision by a professional ecologist".

⁷ Velvet Strand Sea Swimmers and Beach Users, Peadar Farrell, Sabrina Joyce Kemper (twice)

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Cumulative Impacts on Brent Geese and Waders and Possible Disturbance to SPA Birds

Submission:

- 86 The submission from the DCHG's Development Application Unit relates to cumulative impacts on birds from disturbance arising from works at construction compound 9, where cumulative impacts could occur if construction coincided with residential development, and also on the nearby SPAs.

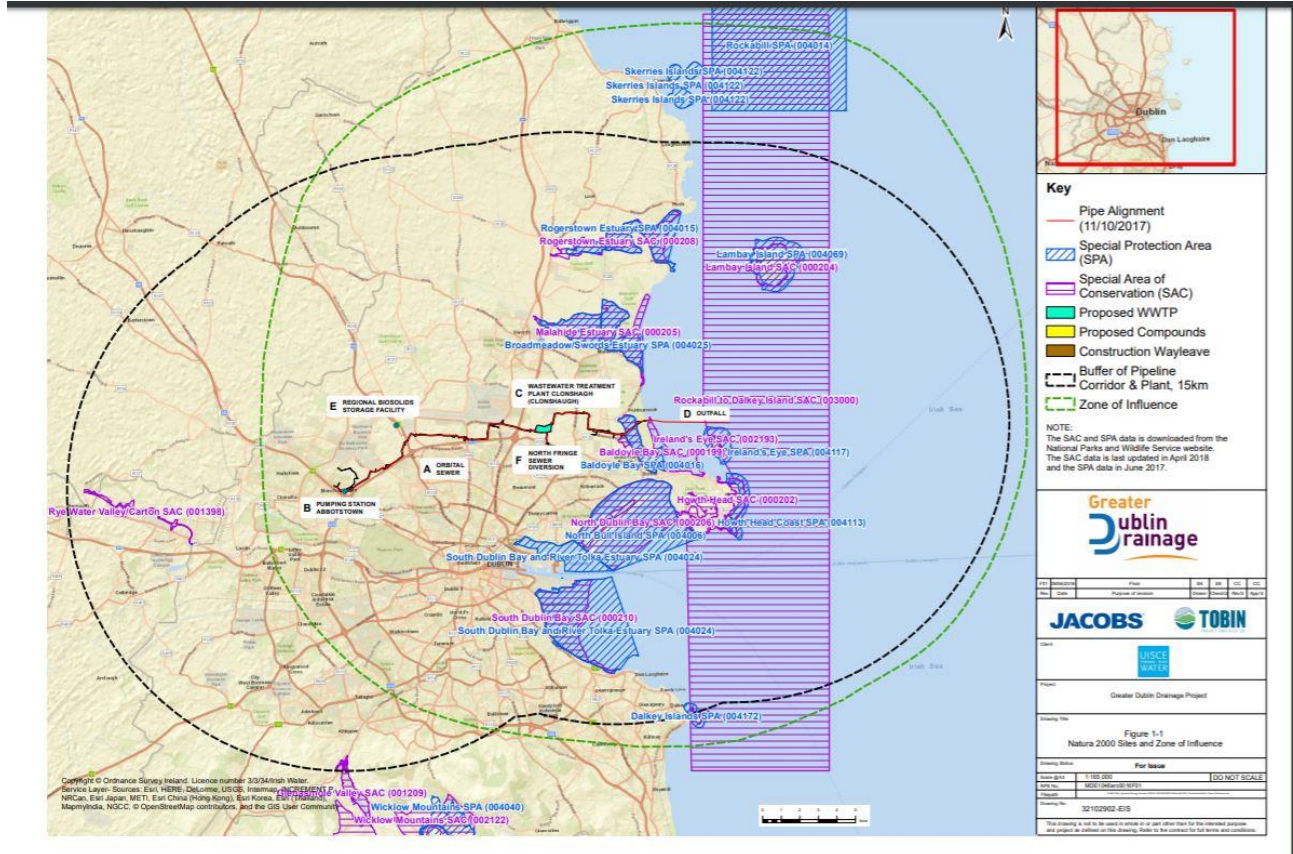
Response:

- 87 Irish Water provided a detailed response to both these issues in the Response to An Bord Pleanála dated 11 January 2019 (in section 11.4). This included consideration of the SPA's objectives, the baseline bird data relevant to potential cumulative impact, and potential disturbance and displacement from temporary construction compound no. 9.
- 88 As highlighted in the Response to Submissions, the temporary construction compound no.9 location was not used to any significant degree by Special Conservation Interests of Baldoyle Bay SPA. In isolation, construction of the Proposed Project will not therefore displace Special Conservation Interests of Baldoyle Bay SPA from this area (either by land take or visual disturbance) and will not cause a significant decrease in the range, timing or intensity of use of areas of the SPA by its feature species.
- 89 The Response Document also considered the potential for cumulative impacts, specifically from the Portmarnock South Local Area Plan and its associated residential development (particularly its phasing and ornithological mitigation measures).
- 90 This showed that there is no significant decrease in the range, timing and intensity of use of areas of the SPA by its Special Conservation Interests will occur alone or in combination with the residential development in question.
- 91 Notably, even in the event that the construction of the residential development coincides with the construction and 14 month presence of proposed temporary construction compound no. 9, cumulative impacts will still not arise due to low value of the area for Special Conservation Interests of Baldoyle Bay SPA, the fact that proposed temporary construction compound no. 9 will be screened to minimise impacts on the SPA, and the mitigation measures proposed for the residential development.

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APPENDIX 1: Extracts from the NIS

Figure 1-1 Natura 2000 Sites and Zone of Influence



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Table 4.2: European Sites potentially affected by the proposed Project

Table 4-2: European Sites potentially affected by the proposed Project

Ref No.	Site Name	Designation Type	Site Code	Approximate Location Relative to Proposed Works	Potential Pathways for LSEs
1	Baldoyle Bay	SAC	000119	Marine outfall passes through this SAC	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Underwater noise and disturbance Habitat loss
2	Baldoyle Bay	SPA	004016	Marine outfall passes through this SPA	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
3	Rockabill to Dalkey Island	SAC	003000	A 1,300m section of the marine outfall and diffuser are located in this SAC	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Underwater noise and disturbance Habitat loss
4	Ireland's Eye	SAC	002193	1.0km south of the marine outfall	Designated for coastal and not marine habitats. There is no hydrological link and no open pathway of effect, thus there is no real possibility of LSEs.
5	Ireland's Eye	SPA	004117	0.4km southwest of the marine outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
6	North Dublin Bay	SAC	000206	2.3km to the south of the marine outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration)
7	North Bull Island	SPA	004006	2.3km to the south of the Marine Outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
8	Malahide Estuary ⁸	SPA	004025	2.5km to the north of the Marine Outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
9	Malahide Estuary	SAC	000205	2.5km north of the marine outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration)
10	Howth Head Coast	SPA	004113	2.6km to the south of the Marine Outfall	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
11	Howth Head	SAC	000202	2.6km to the south of the marine outfall	Designated for coastal terrestrial habitats. There is no hydrological link and no open pathway of effect, thus there is no likelihood of significant effects.
12	South Dublin Bay and River Tolka Estuary	SPA	004024	7.6km south of the Marine Outfall Ballasting and pipe assembly operations may occur in the Liffey channel in Dublin Port where Tern breeding sites are located on structures on the south side of the River	<ul style="list-style-type: none"> Hydrological (water quality and habitat deterioration) Airborne noise and visual disturbance Habitat Loss
13	Rogerstown Estuary	SAC	000208	8.5km north of the marine outfall	Hydrological (water quality and habitat deterioration)

⁸ NPWS also refer to this as Broadmeadows / Swords Estuary SPA.

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Ref No.	Site Name	Designation Type	Site Code	Approximate Location Relative to Proposed Works	Potential Pathways for LSEs
14	Rogerstown Estuary	SPA	004015	8.5km north of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Airborne noise and visual disturbance • Habitat Loss
15	South Dublin Bay	SAC	000210	9.1km to the south of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration)
16	Lambay Island	SAC	000204	9.3km north-east of the marine outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Underwater noise and disturbance
17	Lambay Island	SPA	004069	9.3km north-east of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Airborne noise and visual disturbance • Habitat Loss
18	Dalkey Island	SPA	004172	14.9km south of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Airborne noise and visual disturbance • Habitat Loss
19	Skerries Islands	SPA	004122	16.7km to the north of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Airborne noise and visual disturbance • Habitat Loss
20	Rockabill	SPA	004014	16.9km to the north of the Marine Outfall	<ul style="list-style-type: none"> • Hydrological (water quality and habitat deterioration) • Airborne noise and visual disturbance • Habitat Loss
21	Glenasmole Valley	SAC	001209	14.8km south of the project	This SAC is situated 14.8km south of the Orbital Sewer. It is considered that there is no potential for effects on this site as no connecting pathways, e.g. streams or rivers) potentially lie within the zone of influence
22	Rye Water Valley/Cartron	SAC	001398	8.7km to the west of the project	This SAC is situated 8.7km to the west of the Orbital Sewer. It is considered that there is no potential for effects on this site as no connecting pathways, e.g. streams or rivers) potentially lie within the zone of influence