QUESTIONS AND ANSWERS DOCUMENT IN RESPONSE TO THE DAERA CONSULTATIONS ON A MARINE LICENCE, WATER ABSTRACTION LICENCE AND WATER DISCHARGE CONSENT FOR ISLANDMAGEE ENERGY LIMITED - GAS STORAGE FACILITY

DAERA -OCTOBER 2021

Contents

1. Project rationale

Question 1 – How does the project align with the Energy Strategy for Northern Ireland?

Answer 1 – The 2010 Strategic Energy Framework makes reference to the benefits which a significant gas storage facility could provide, including additional security of supply for electricity generation and domestic and commercial gas consumption, and notes the Islandmagee storage project. The context for energy has changed substantially since the 2010 Strategic Energy Framework was published. A new Energy Strategy is being developed by the Department for the Economy which will focus on meeting net zero carbon targets, and will include consideration of security of energy supply. It is planned to publish a new Strategy by the end of 2021, subject to the approval of the Minister for the Economy.

Question 2 – Should Northern Ireland not be progressing towards the UK's net zero target by 2050 through renewable energy?

Answer 2 – In June 2019, the UK became the first major economy to establish a target to bring all greenhouse gas emissions to net zero by 2050. Renewable electricity production has been increasing in Northern Ireland as greater amounts of large scale on-shore wind generation and other renewable generation has become available. The new 2021 Energy Strategy being developed by DfE will focus on local mechanisms to reach the Net Zero target. Gas storage could complement renewable energies in the glide path to Net Zero, particularly as wind generation is variable and there must be sufficient conventional generation to provide security of supply when renewable generation is not available. Natural gas is a cleaner fossil fuel than oil or solid fuel.

Question 3 – Is there a need for this project for security of gas supply to Northern Ireland?

Answer 3 – The Department for the Economy has advised that all of Northern Ireland's natural gas requirements are provided via an undersea pipeline from Scotland, and there are established arrangements to ensure gas security of supply, including consideration on a UK/Ireland basis. So although the project could enhance security of energy supply, it is not essential.

The South-North pipeline, between the Republic of Ireland (RoI) and Northern Ireland is not routinely used to supply natural gas to the north, but it provides security of gas supply in the event of a failure or restriction of direct gas supplies from Great Britain (GB) to Northern Ireland. In such circumstances, gas can flow from GB to RoI, and then into Northern Ireland via the South-North gas pipeline.

Question 4 – Will the project result in cheaper gas prices for consumers?

Answer 4 – Gas storage facilities generally operate commercially through purchase of gas for storage during summer months when gas tends to be cheaper, and sale of the gas at higher cost during periods of higher demand, particularly in winter months. These savings may be passed on to consumers.

Question 5 – Will the proposal enhance gas supply in Northern Ireland?

Answer 5 – Around 282,000 households and businesses in Northern Ireland are currently connected to the natural gas network. All of Northern Ireland's natural gas requirements are provided via an undersea pipeline from Scotland, and there are established arrangements to ensure gas security of supply, including consideration on a UK/Ireland basis. The proposed natural gas storage project at Islandmagee could, however, enhance our security of energy supply. This project proposal cannot supply local gas on Islandmagee as the necessary infrastructure is not available.

Question 6 – Will the Scotland to NI pipeline (SNIP) need to be either converted to a reversible line or twinned and who would fund this?

Answer 6 – The operation of the SNIP is outside of DAERA's remit. Changes to its operation are regulated by the Utility Regulator (UREGNI). However, DAERA understands that the any connection of the Islandmagee natural gas storage project to existing gas networks in NI, including to the Scotland to NI pipeline (SNIP) would be funded by the project developers. The developers would likely also have to fund any upgrading of the SNIP to facilitate physical gas to flow from NI to GB, unless this was required for other purposes.

Question 7 – Does this project have EU Project of Common Interest (PCI) status?

Answer 7 – The project was successful in obtaining EU Project of Common Interest (PCI) status for a number of years, via the EU TEN – E process. PCI designation provided access to some EU Connecting Europe Facility (CEF) grant support towards pre-development activities for the project which included exploratory drilling and project design. The Islandmagee natural gas storage project no longer retains PCI status, which also precludes an application for future EU CEF grant support.

Question 8 – Has DAERA considered the impact of this project on climate change and the UK targets to meet Net Zero by 2050?

Answer 8 – Yes. DAERA has considered this application in line with the UK Marine Policy Statement 2011, Section 3 and the draft Marine Plan for Northern Ireland. Both of these documents require climate change considerations as part of the decision-making process. Whilst the UK transitions away from fossil fuels towards

renewable and low carbon energy supply, there is still a requirement for energy contributions from the oil and gas sectors.

Question 9 – What weight has been given to evidence from similar gas storage projects in making your assessment of this one?

Answer 9 – Comparison with similar sites can be valuable to ensure consistency in regulatory approaches and the Department has considered information relating to the salt caverns at Aldbrough. Departmental officials visited the site several years ago and spoke to a range of stakeholders. Many stated that preconceived fears and uncertainty were not realised and the construction of the caverns had no long term negative impacts on the environment. However each application is assessed on its own merits and the evidence to support this application has been considered on that basis.

2. Project detail

Question 10 – Who is funding this project?

Answer 10 – The Islandmagee natural gas storage project is being taken forward by a private developer (Islandmagee Energy Limited).

Question 11 – Where are the caverns located and how many are there?

Answer 11 – The approximate cavern locations are shown in both the Non-Technical Summary and the updated Marine Licence Application, 2019. The proposed seven Islandmagee natural gas storage caverns would be developed under the seabed of Larne Lough within the boundary outlined in the application.

Question 12 – What depth are the proposed caverns?

Answer 12 – The depth quoted in the original documentation stated that the caverns would be located at a depth of approximately 1,500m below the surface. The more recent documentation (2019) states that the caverns will be formed at a depth of approximately 1,350m below the surface. The more precise depth was confirmed following a 2015 borehole, and this detail was used in the Front-End Engineering design. The final co-ordinates of the caverns (e.g. x, y, depth etc.) will be determined once drilling has been completed, in accordance with typical industry methods for cavern development.

Question 13 – What capacity are the caverns?

Answer 13 – A total working gas storage capacity of between 400-500 million standard cubic metres will be created in up to 7 salt caverns. The actual capacity of each cavern is a function of the geology and solution mining process, and the final capacity of the caverns will only be known after completion of the solution mining and testing of the caverns.

Question 14 – How long will the caverns be operational?

Answer 14 – It is anticipated that the caverns will be operational for about 40 years.

Question 15 – What is the intended use of the gas caverns and could these be repurposed for storage of renewable energy technologies?

Answer 15 – The current application and design of the facility is for the storage of natural gas only. Alternative use is not being considered in this application. The Department is aware that the applicant may wish to re-purpose these for storage of hydrogen in the future. The advice is that salt storage caverns could be repurposed for the storage of compressed air or hydrogen storage. Any change of use may invalidate the current licence and the company would be required to inform the Department of any intended change of use immediately.

Question 16 – What did the Front End Engineering Design (FEED) cover?

Answer 16 – The Front End Engineering Design (FEED) covered the full project scope including sub-surface and surface elements. The latest information from this has been supplied for the Marine Licence application.

Question 17 – Was the design and construction methodology provided?

Answer 17 – Islandmagee Energy has provided DAERA with the information required for Marine Licence application. Drawings for the intake head and diffuser are given in Appendix A of the Marine Environmental Conditions Update Report (2019) and the design and proposed construction methods for the Seawater Intake and Brine Discharge are summarised in sections 3.1 and 3.2. A Construction Environmental Management Plan is also required as a condition of the Marine Licence.

Question 18 – How will the pumps go from the pump house to the sea bed and how will these be designed and constructed?

Answer 18 – Detailed images of the proposed seawater intake pump station are available in the Planning Application (Application No: F/2010/0092/F) and on the company website (www.islandmageeenergy.com) as these are terrestrial

components of the proposal which already have approval. The pumps are located in a shaft in the pump house building. At the base of the shaft there is a tunnel out into the sea. At the seabed a small intake arrangement will be installed, including filters to minimise sea life entering the intake. The intake and base of the shaft will be flooded.

Question 19 – Will there be pipes visible across the foreshore?

Answer 19 – No, Pipes will be trenched through the shore.

Question 20 – What is the timetable for construction?

Answer 20 – It is anticipated that the total construction time will be phased over 10 years, to include the construction of the infrastructure (pipework etc.) for abstraction and discharge initially, and the solution mining phase at a later date.

Question 21 – Why has there been a change to the design and number of diffuser ports?

Answer 21 – The design has been refined, as detailed, in the Front End Engineering Design report to maximise the dilution and dispersion of the brine discharge.

Question 22 – How will materials be transported during construction?

Answer 22 – Permission was granted in 2012 to bring all equipment in by road and this is part of the planning conditions.

Question 23 – Has the impact of construction noise been assessed?

Answer 23 – Noise has been assessed as part of the Environmental Impact Statement. More detail is given in the biodiversity section.

Question 24 – Will the Science and Technical Advisory Group be reconvened to oversee the scientific aspects of the project?

Answer 24 – The Science and Technical Advisory Group will be reconvened. DAERA will oversee this group and can chair if necessary.

Question 25 – Will the seawater pumping station & leaching plant be removed?

Answer 25 – Once leaching is completed, the leaching equipment will be deactivated. However it will not be completely removed until the end of the project life, as it may be required for maintenance and elements will be required for

decommissioning. These future activities are subject to appropriate consents being granted.

Question 26 – At the end of the life of the project how will the caverns be sealed?

Answer 26 – The detailed plan for each cavern will be developed at the end of cavern operations, based on the regulatory requirements and industry best practise at the time. The Solution Mining Research Institute have technological guidelines for safe cavern sealing.

Question 27 – Who is responsible for decommissioning and liability?

Answer 27 – Infrastrata is responsible for the safe decommissioning of the natural gas storage caverns at the end of the project life and for ensuring that arrangements are made in respect of any residual liabilities. The issue of a lease from the landowner, The Crown Estate, will require that Infrastrata prepares an acceptable Abandonment Programme applicable to the works including the arrangements for residual liabilities. The Crown Estate agreement requires that conditions are satisfied before any lease can be entered into or any works in the marine space can be carried out; these also relate to residual liabilities and the 'decommissioner of last resort' issue. DAERA will continue to engage with The Crown Estate to ensure that all conditions are satisfied.

The company will also require a new marine licence from DAERA to undertake the physical aspects of the decommissioning activity.

3. Consultation material and process

Question 28 – Is the Department content with the material that has been presented for consideration and is accurate and reliable?

Answer 28 – DAERA is content that the material presented is sufficient to determine the marine licence under the Marine and Coastal Access Act, 2009, and the consent required under the Marine Works (EIA) Regulations 2007, as amended 2011. The impacts of this project has been assessed through the Environmental Impact Assessment (EIA) decision making process. The same approach is being applied to the process of the Water Order Consent and Abstraction Licence determination. The applicant is required to provide accurate and current information. DAERA scrutiny and wider consultation can help pick up on any inconsistencies to ensure that the final determinations are based on the best available evidence.

Question 29 – What areas of the Environmental Statement were updated in 2018?

Answer 29 – In 2018, DAERA Marine & Fisheries Division reviewed the Environmental Statement submitted with the original application and identified that some of the marine data used to inform the Environmental Statement in 2012 was out of date and must be supplemented with more recent information and updated environmental assessments before the marine licence application could be progressed. Further environmental information was requested covering: Avian and Marine Biodiversity, Underwater Noise, Cumulative Effects and an update to Brine Dispersion Model and 3rd party audit to consider the conclusions of the Front-End Engineering Design. All of this material has been made available to the public on the DAERA website.

The non-technical summary was not updated as the essential elements of the project have not changed. The updated application provides explanation.

The Department (DAERA) is content that there is a sufficient description of the project design in the application and supporting documents.

Question 30 – How has DAERA made the consultation material available to the public?

Answer 30 –The material has been made available for public consultation digitally, in hard copy at our offices in Belfast and also at public meetings. DAERA staff attended all of the public meetings hosted by the company to explain the consenting and licensing processes. A number of meetings were held at various times, morning, afternoon and evening at locations in Islandmagee, Larne Town and Ballygally and these were advertised locally. The public engagement events organised by the company were well attended by a wide age demographic and there was good opportunity for face-to-face queries.

DAERA staff have also answered numerous phone calls, letters, Freedom of Information requests (FOIs), Environmental Information Regulations requests (EIRs) and emails in relation to the proposal. This Q&A is to ensure transparency on all the issues raised.

Question 31 – When did consultations take place?

Answer 31 – The consultation for the Marine Licence application was advertised by the applicant in the Belfast Telegraph on 20 December 2019 and 27 December 2019, and in the Larne Times on 26 December 2019 and 2 January 2020.

The consultation period was for 42 days from 20 December 2019 to 7 February 2020. During the consultation period, copies of the application, Environmental Statement and Marine Environmental Conditions Update were available for viewing at our premises at the Klondyke Building, Belfast by appointment. These documents were also available to view online on the DAERA consultation website for this application. Due to an error with the consultation advertisement (the full address of

the applicant company was not included as per the Marine Works Regulations NI 2011), the consultation was extended until 27 March 2020.

In order to ensure that vulnerable persons who had to self-isolate during the initial lockdown had the opportunity to make representations, DAERA offered the opportunity to submit written responses to the consultation between 10 December 2020 and 31 December 2020. DAERA staff also offered the opportunity for concerned residents to phone to discuss concerns.

The advertisement for the Discharge Consent and Abstraction Licence review was placed by the applicant in the Belfast Telegraph on 16 December 2020 and in the Larne Times on 17 December 2020. The advertisement deadline ended 13 January 2021. The advertising period was not extended, however the Department agreed to accept responses a further 7 days after the closure of the advertising period in recognition of the Christmas holidays and Covid-19 pandemic. This information was updated on the DAERA website. All information related to the advertisement was made available online. Access was provided to the office to view hard copies as well as hard copies and USB pen drives, containing all documentation being made available on request to those who could not travel or were isolating or shielding. The review submissions were advertised under the Habitats Regulations, which do not specify a timescale or particular requirements for the process. The Department determined that 4 weeks was sufficient in this case due to previous extensive consultation on the majority of the materials.

Question 32 – Who was consulted?

Answer 32 – The public consultation is an open process which is advertised both online and in local newspapers. DAERA also directly consult directly with stakeholders and consultees, for example fisheries, conservation advisors and navigation authorities.

The Royal Society for the Protection of Birds (RSPB), Geological Survey NI (GSNI) and The Health and Safety Executive NI (HSENI) were consulted during the consultation process.

Question 33 – Why has the Department not made available all historical documentation as part of the current consultation/advertisement?

Answer 33 – Some of the older documents have been superseded and are not being used in the determination and were therefore not relevant to the current consultation/advertisement. These include copies of previous consents and the 2013 HR Wallingford report.

4. Sea Water Abstraction & Brine Discharge

Question 34 – Where is the location of the proposed abstraction point?

Answer 34 – The Abstraction Licence application states the approximate Irish Grid Reference for the Abstraction point and this is annotated on the application map. The grid reference is: D 4464 3270.

Question 35 - What is the maximum volume of water that will be abstracted?

Answer 35 - The maximum volume of water abstracted is 24,000 m^3/day.

Question 36 – Where is the location of the proposed discharge?

Answer 36 – The Consent to Discharge application states the approximate Irish Grid Reference for the location of the diffusers and this is annotated on the application map. The approximate grid reference for the diffusers is: D 4507 0347.

Question 37 – What is the composition of discharged material?

Answer 37 – The discharged materials will consist of dissolved salt from the geological formations in the sea bed. The solution will be mostly brine (sodium chloride - NaCl) but also contains a number of elements at very low concentrations which are present as impurities in the natural salt (Cadmium, Mercury, Arsenic, Boron, Chromium, Lead, Nickel and Zinc). All of these are present at levels below Environmental Quality Standards (EQS) based on analysis of salt cores from this location. The discharge may contain low levels of entrained or suspended solids. The levels will be carefully monitored and standard on the consent to discharge must not be exceeded.

Question 38 – How long will the duration of the leaching & associated discharge be?

Answer 38 – It is anticipated that the discharge associated with the solution mining will take place for between 5 and 9 years. This is dependent on the leaching flow rate and how quickly the company wishes to create the caverns, which will be dictated by market conditions.

Question 39 – What impact will the brine discharge have on receiving water salinity?

Answer 39 – Salinity is measured in Practical Salinity Units (PSU). Background salinity in the North Channel off Islandmagee is reported at between 30.5 PSU and 34.8 PSU.

The salinity at the point of discharge will be 260 PSU and the brine dispersion modelling indicates salinity levels rapidly returning to background, with 34.8 PSU

achieved within 300 m of the discharge as stated on page 49 of the Front End Engineering Design brine modelling report.

Any increases in salinity above 36 PSU will be limited to within 100 m radius of the outfall and this will be a condition of the Consent to Discharge.

Hyder Consulting (2011) advised exposure to <36 PSU would have minimal effect on the marine environment. Baseline seawater salinity does not vary substantially over time in this area and therefore the Department did not request that this information was updated in 2019. There will be no visible impact at the surface from the brine discharge.

Question 40 – What impact will the brine discharge have on receiving water temperature?

Answer 40 – Upon discharge from the cavern the brine will naturally cool in the pipelines and the open air settlement pond prior to being discharged to the sea. The discharge is predicted to return to within 2 degrees of the ambient water temperature within the 100 m impact zone, based on the 25:1 dilution effect of the surrounding waters detailed in the Brine dispersion modelling. Temperature monitoring and control, will be in place at the Leaching Facility to ensure that the brine discharge temperature remains below the water discharge consent licence condition of 22°C (at the sampling chamber on land) prior to discharge. Further monitoring at buoys at the fringe of the impact zone will ensure the return to ambient conditions within 100 m.

Question 41 – What impact will the brine discharge have on receiving water pH?

Answer 41 – The background pH value of seawater is approximately 8.1. The addition of salt (sodium chloride - NaCl) to the seawater will not impact the pH.

Question 42 – What is the extent of the area that will be impacted by the brine discharge?

Answer 42 – The impact zone is defined as the area where salinity concentrations exceed the agreed trigger level >36 PSU. The most heavily impacted zone is defined as 100 m radius from the diffusers. The diffusers will be located at D 4507 0347

The predicted impact zone will be closely monitored to ensure no exceedance occurs. The discharge consent will have a shutdown requirement if breaches are detected.

Question 43 – What is the volume of the discharge?

Answer 43 –The maximum volume of the discharge will be 24,000 m^3/day.

Question 44 – What are the monitoring arrangements to ensure the consent standards are met?

Answer 44 – DAERA will monitor compliance with agreed standards and in the event of a breach, the appropriate enforcement action will be taken under the Water Order. The operator will also be obliged to undertake self-monitoring and report this data to DAERA. Any exceedance of the consent must be notified to the regulator and this will be a condition of the consent.

Question 45 – What are the discharge consent conditions?

Answer 45 – The discharge consent includes a number of conditions designed to minimise the impact on the environment. These include:

- Discharge standards for salinity, temperature, suspended solids, metals and flow rate;
- What actions will be undertaken should the standards for these parameters be exceeded; and
- A mandatory Environmental Monitoring Programme

The final discharge consent conditions will be published on the DAERA website.

Question 46 – How will compliance with discharge consent be monitored?

Answer 46 – The applicant has submitted an Environmental Monitoring Programme, which is part of the consent conditions. This includes the requirement for the operator to undertake self-monitoring and reporting in addition to DAERA/NIEA undertaking monitoring of the composition, temperature and flow rate of the brine at the landward sampling chamber. Dispersion of the brine will be monitored via buoys in the water column. These will include logging and telemetry technology to monitor the discharge and alert the operator and DAERA/NIEA to any exceedances.

Question 47 – Is DAERA confident that the RPS Brine Dispersal modelling is correct?

Answer 47 – The HR Wallingford (2019) Third Party Review is accepted as an independent assessment of the RPS brine modelling, conducted by leading experts in the field and was undertaken at the Department's request. HR Wallingford is a reputable not-for-profit research establishment. Consequently, DAERA considers the outcomes of the review to be impartial and reliable.

Question 48 – Why has the live brine dispersion model not been shown to the public?

Answer 48 – The full model details and outputs are in the Brine Dispersion report in Appendix B of the Marine Environmental Conditions Update Report, 2019.

Question 49 – Will there be maintenance discharges?

Answer 49 – Maintenance discharges are not the subject of the present discharge consent application. The need for maintenance discharges will not be known until the caverns are constructed and operational and the regular monitoring indicates any need for such work. Maintenance discharges would be subject to a new application or variation.

5. Biodiversity

Question 50 – How will the Department make an assessment of the impacts on species and habitats that are part of the National Site Network (previously referred to as European sites)?

Answer 50 – The Department has completed a Habitats Regulations Assessment (HRA) which is required for the National Site Network. The applicant produced a shadow HRA which has been considered by the Department as the decision maker. It is the Department's Assessment that is key within the decision making process. All information relating to the National Site Network sites is contained within the Department's Habitats Regulations Assessment. A full list of the sites considered is given in the HRA and also in Section 7 of the Marine Environmental Conditions Report, 2019. A map is also provided in Figure 7-3 on page 60 of the Report.

The new National Site Network designations like the East Coast SPA site are the main reason that a full review of the 2012 applications was requested by DAERA. The additional data was requested so these can be fully assessed and considered.

Question 51 – Which other designated sites have been considered in the determination of the licences and consents?

Answer 51 – In addition to the National Site Network site, the potential impacts of the project have been considered on the following sites designated for nature conservation features in Chapter 5 of the Environmental Statement 2010:

- Portmuck Area of Special Scientific Interest (ASSI);
- Gobbins ASSI; and
- Larne Lough ASSI.

The bird assessments were updated in the Appendix 5 of the Marine Environmental Conditions Update, 2019.

Cumulative effects are fully considered in DAERA's HRA.

Whilst the Waterloo ASSI was not mentioned explicitly, the impact on Geology and Hydrogeology was assessed in Chapter 12 of the EIS. The potential impacts considered were: loss of exposure, rockfall and aquifer contamination. It was

concluded there will be no significant impacts to geology, hydrogeology or hydrology arising from the proposed natural gas storage facility at Islandmagee.

The closest Marine Conservation Zones (MCZ) in Belfast Lough was also considered in the assessment and DAERA is satisfied that no current or proposed MCZ will be impacted by the project.

Question 52 – Who conducts the marine life surveys and can this not be provided by an independent company?

Answer 52 – The onus is on the applicant to pay for and supply data and assessments. The data presented in the documents is a mix of publically available data collected by government and other data collected specifically by the company to support the application. However, the environmental assessments made by the company are assessed by subject experts within DAERA and sometimes by third parties to ensure the survey is of good quality.

Question 53 – Will the project have a negative impact on migratory fish?

Answer 53 – The impact on fish is expected to be highly localised and temporary, and is not expected to have any significant impact on salmonid migration patterns. Water clarity will not be significantly altered and turbidity will be monitored. Baseline characterisation for Atlantic salmon was presented in section 7.3.5.3 of the Marine Environmental Conditions Update Report (2019); biodiversity maps indicate that Atlantic salmon occur in low numbers in the rivers along the east coast of the Ireland The nearest Special Areas of Conservation (SACs) designated for migratory fish species are the River Boyne and River Blackwater SACs, located more than 150 km from the Project.

Question 54 – Will the abstraction of seawater be a risk to passing fish or marine life?

Answer 54 - To mitigate impacts, the design of the intake structure is raised above the seabed, to reduce impacts on shell fish and bottom feeding organisms, Then the combination of 12 mm fish screening and the ‘specific design area’ of the intake, restricts the intake velocity to <0.1 m/s, with a maximum velocity of 0.15 m/s. Marine mammals, including adult migratory fish, are too large to be entrained and too agile to be impinged and have therefore been scoped out of further assessment. Juvenile fish (smolts) of 20 mm in length have a critical swimming speed of 20 cm/s or greater, which is higher than the velocity of the intake.

Question 55 – What bird survey work was carried out?

Answer 55 – Surveys were requested to assess the use of the area around the outfall and intake by foraging seabirds during the breeding season, primarily but not exclusively, tern species for which Larne Lough is designated a Special Protection

Area (SPA). The most recent surveys (2019) were to supplement data gathered during previous surveys for the Islandmagee Gas Storage Facility and an unrelated project in Islandmagee which is no longer proceeding. Surveys to assess the use of the wider area around the potential zone of influence by foraging seabirds conducted in 2008-2009; 2011-2012; 2015 and 2019 have shown that this area is not an important area for feeding. Tracking studies of terns between 2009 and 2011 supported these findings, that the area is not widely utilised by foraging birds (Wilson *et al*, 2014). In addition, seabirds are known to have extensive foraging areas which can range from tens to hundreds of kilometres and therefore localised changes to the levels of prey are unlikely to have significant impacts on the wider seabird populations.

Whilst it is acknowledged that surveys were carried during the latter part of the breeding season, it is considered the results are representative of the species found in the locality of the proposed intake and discharge pipelines and results are similar to those from previous surveys carried out in the area. Ornithology experts within the Department (DAERA) are satisfied with the bird survey data submitted for this proposal.

Question 56 – Will the discharge impact on the feeding patterns of puffins?

Answer 56 – Puffins feed on a wide range of prey species and the ornithological experts do not think that the proposed discharge will have a significant impact on feeding habits.

Question 57 – Will the proposed abstraction or discharge impact on plankton species or foodwebs?

Answer 57 – The potential impact of abstraction (entrapment/impingement) of sea water on plankton was considered in section 8.7.1 of the assessment of significance. Conclusions were that there is unlikely to be a significant impact on the abundance of plankton in the water column or at the population level of the constituent species.

The Marine Environmental Conditions Update (MECU) Report (2019) also investigated the likely effects on the ‘food chain’ within the ‘Interdependencies’ section of the MECU Report (section 7.8). This concluded that whilst the construction and operational phases result in changes to spawning and nursery habitats, all spawning and nursery grounds are extensive, relative to the study area, therefore effects are unlikely to be significant. As such, there is not likely to be an effect on receptors at higher trophic levels. Localised changes to the food chain are unlikely to have significant impacts on interdependencies within the wider study area.

Question 58 – Will the abstraction or discharge impact on seagrass or seaweed species?

Answer 58 – Seagrass is not present in the impact zone of the proposal which has been fully surveyed. Seagrass beds in Larne Lough are surveyed by DAERA.

Question 59 – Will the proposed discharge impact kelp beds?

Answer 59 – The impact of the operational phase of the project on seaweed species was considered in section 7.7.2 of the Marine Environmental Conditions Update Report (2019). This was informed by baseline characterisation of benthic habitats within the vicinity of the project carried out in August 2019. The impact zone of this proposal is not going to impact a significant area of kelp bed.

Question 60 – How was the benthic ecology survey carried out in 2009 and 2019?

Answer 60 – The Marine Environmental Conditions Updated Report (2019) Appendix D presents the findings of the Benthic Surveys undertaken 2019 and details the methods used which were primarily by video, beam trawl and benthic grabs It was found that the species from the 2019 survey were similar to those identified in 2009 but as noted direct comparison of species abundances cannot be made between the two samples due to the different sampling techniques used in 2009 and 2019.

Question 61 – Given that the benthic ecology will be impacted within 100 m of the diffusers, will this be surveyed?

Answer 61 – Yes, the benthic ecology will be surveyed before, during and after the period of the brine discharge to ensure that the impact and the recovery of the site is fully understood. This is detailed in the Environmental Monitoring Programme, Section 9 beginning on page 132, of the Marine Environmental Conditions Update Report (2019), and is a condition of the licence.

Question 62 – How was the seal survey work conducted?

Answer 62 – The Seal Survey Data between 2000 and 2018 was obtained from the Centre for Environmental Data and Recording Northern Ireland (CEDaR). This is detailed in sections 7.3.6.7 and 7.3.6.8 and Appendix G of the Marine Environmental Conditions Update Report (2019), and lists the most up to date data used in this analysis. The data includes: details of data source, details of species date of collection and grid reference. Aerial surveys of haul-out sites were conducted in 2018, 2011 and 2002 (Morris and Duck, 2019).

Question 63 – Have noise impacts been considered, and particularly potential impacts on marine mammals like porpoises?

Answer 63 – Noise has been assessed as part of the consideration of this application. The impact of underwater noise from cavern construction is specifically addressed in Section 6.6.1 of the Marine Environmental Conditions Update (MECU) Report (2019). Underground drilling and fluid pumping will be driven by sources located at ground level. The principle noise source will be drilling during construction, which is similar to the horizontal directional drilling (HDD) noise referred to in Section 6.5.4.2 of the MECU Report. Drilling for the cavern formation will be carried out at depths of up to 1,300 m below the seabed resulting in significantly lower noise levels. For this reason noise levels at the seabed are regarded as negligible.

There is nothing in the scientific literature on underwater noise to indicate that noise from an outfall pipe poses any risk to marine species. The outfall at Islandmagee is designed for the flowrate required and operates through multiple diffuser ports. As outlined in the MECU Report, the only significant noise emissions related to the diffuser will be during the short-term construction phase.

The potential underwater noise impact on Harbour Porpoise has been specifically addressed in the Islandmagee Gas Storage Facility MECU Report, 2019. An underwater noise model was prepared, addressing each of the potential underwater noise sources. Underwater noise from the brine diffusers has been addressed specifically in Section 6.5.2 of the MECU Report.

Noise sources such as the seawater intake and the brine outfall are ‘passive’ sources. The water intake and brine discharge diffuser are described in Section 3.3.1 of the Marine Construction Licence Application. There are no mechanical or powered components involved. The only noise source is flow noise. In both cases the engineering design is optimised to minimise energy requirements (and consequently noise output). Diffusers and seawater intakes operate at such low noise levels that they do not feature in underwater noise literature. As stated in the MECU Report operational noise from the seawater intake and brine outfall will be close to baseline levels and below those arising from ferry traffic.

All information regarding the assessment of the potential impacts on the North Channel Special Area of Conservation (SAC) is covered in the Department’s Habitats Regulations Assessment (HRA). With regards to noise from diffusers, there are no projected underwater noise impacts due to the operation of the brine outfall diffuser. Any noise from pumps located onshore will be significantly attenuated in the pipeline and the diffuser. It is anticipated that the operational noise from the brine outfall will be close to baseline levels and below those arising from ferry traffic.

Noise monitoring is a component of the Environmental Monitoring Plan which will be agreed and overseen by a science group. Noise impacts have been fully assessed in the Environmental Assessment and within the Department's Habitats Regulations Assessment.

Question 64 – Did any of the assessments (Environmental Impact Assessment (EIA) or the Habitats Regulations Assessment (HRA)) consider noise and sonar impacts during the solution mining phase of the caverns?

Answer 64 – During the solution mining of the salt caverns, the internal geometrical configuration of the cavern is determined by employing specialised sonar survey logging techniques. To that effect, a sonar probe (comprising a rotating and tilting head bearing optimised acoustic transducers) is run in the cavern, emits a directional sound wave towards the cavern walls and records the accurate position of the interior of the cavern. The transmitted sound waves are reflected at the boundaries of the salt cavern and do not propagate in the surrounding salt mass and most certainly cannot travel and reach the sea above the cavern.

Question 65 – Will the potential disturbance from this project impact bats?

Answer 65 – The impacts on bats was assessed under the original Environmental Statement that was submitted to the Department of the Environment NI who granted planning permission for the Natural Gas Storage Facility at Islandmagee in October 2012 (Application No: F/2010/0092/F). This permitted the construction of the terrestrial elements of the Gas Storage facility and associated development at Islandmagee, Co Antrim, subject to certain conditions.

Question 66 – Will the potential discharge impact otters?

Answer 66 – The potential impacts on otters was assessed under the original Environmental Statement that was submitted to the Department of the Environment NI who granted planning permission for the Natural Gas Storage Facility at Islandmagee in October 2012 (Application No: F/2010/0092/F).

Question 67 – How have the in-combination effects of other discharges and regulated operations in the area been assessed?

Answer 67 – The Habitats Regulation Assessment including consideration of other regulated activities within a 10 km radius of the proposed discharge point, including other discharge consents, abstraction licences, Industrial installations, Marine licences and current planning applications. It is considered that the total effect of the above-mentioned combined licences or permissions (and their effects) is equal to the sum of individual effects. Accordingly, additive effects are not envisaged.

6. Health and Safety Aspects

Question 68 – What is the role of the Health & Safety Executive NI (HSENI)?

Answer 68 – HSENI's role is to enforce the relevant Health & Safety legislation.

Question 69 – What is the relevant Health and Safety Legislation in relation to this project?

Answer 69 – There are various pieces of legislation that apply to this development. These include the Control of Major Accident Hazards (COMAH) Regulations (Northern Ireland) 2015 and Borehole Sites and Operations Regulations (Northern Ireland) 1995. The purpose of the COMAH Regulations is to prevent major accidents involving dangerous substances and limit the consequences to the environment as well as people. The Health & Safety Executive NI (HSENI) is the competent authority on these matters and will need to be satisfied that Islandmagee Energy Limited can comply in full with the requirements.

Question 70 – Has full consent been obtained from the Hazardous Substance Authority for the storage of the proposed quantity of natural gas in underground caverns?

Answer 70 – The Local Planning Authority is the appropriate authority to comment on Hazardous Substance Consent (HSC) and indicate if HSC is a requirement for this site.

Question 71 – Is there unexploded ordnance in the area of construction?

Answer 71 – As detailed in the Environmental Statement Addendum Report (Appendix B), a comprehensive marine geophysical survey was carried out by IMAR Survey Ltd in April 2010. The objective of the geophysical survey was to collect detailed bathymetric, side scan sonar, magnetometer and sub bottom profiling data to reveal the nature of the seabed and to identify anomalies that may be of interest either lying exposed on the surface of the seabed or buried within the surface sediments. The survey did not reveal any significant features or anomalies on the proposed pipeline route. A pre-construction unexploded ordnance (UXO) survey will be undertaken by the Outfall Contractor prior to construction.

Question 72 – How will health and safety be managed on the construction sites?

Answer 72 – A Principal Designer and a Principal Contractor will be appointed by the company to design and build the facility. Under the Construction Design and Management (CDM) Regulations, the Principal Designer and the Principal Contractor appointed to work on a project shall have the skills, knowledge and experience, and, if they are an organisation, the organisational capability, necessary

to fulfil the role that they are appointed to undertake, in a manner that secures the health and safety of any person affected by the project.

Question 73 – What is the risk of a failure of an underground gas cavern and is seismic activity a risk to the integrity of the caverns? (There was a seismic event in Ballycastle / Rathlin in 2019.)

Answer 73 – It is highly unlikely that any of the seismic events that have been recorded in the area, either instrumentally or from historical records, would have any impact on the integrity of the proposed caverns. Safety Reports, required under COMAH, require operators to consider environmental impacts on the site such as seismic activity.

Salt layers effectively has the ability to self-heal (anneal) and 'repair' any areas of fault damage.

7. Impact on Islandmagee community

Question 74 – How have Human Rights been considered in this process?

Answer 74 – DAERA has conducted an Equality Impact Assessment screening.

Question 75 – What consideration has been given to the impact of this project on the growing tourism industry in Islandmagee?

Answer 75 – The impact of the Islandmagee Natural Gas Storage Facility on tourism has been assessed in Chapter 13 of the Environmental Impact Assessment (EIA). The assessment concluded that the proposed project is likely to have no impact on the tourist industry in the area post construction. The Gobbins cliff path should not be impacted by this project proposal.

Question 76 – How will the proposed discharge impact bathing water quality?

Answer 76 – There will be no impact on identified bathing waters, the closest of which is at Brown's Bay, Islandmagee. The modelling demonstrates that salinity levels will be at background levels within 300 metres of the diffuser and there is no faecal matter within the discharge to impact bathing water quality. The impact of the Brine outfall on Beaches, Bathing Waters and Human Beings has been assessed in Chapter 13 of the Environmental Impact Assessment (EIA).

Question 77 – Will the project create employment opportunities?

Answer 77 – The company states that 'during the construction phase, this project will create around 400 jobs, with an additional sixty permanent jobs created during its operational lifetime. This will be a diverse range of skilled and unskilled jobs, including employment opportunities for young people, likely to include an apprenticeship scheme.

Question 78 - What impact will be felt by fishermen and other local businesses?

Answer 78 – The fishing community has responded to the consultation. The impact zone of the proposed discharge only affects a small area of the sea. Islandmagee Energy Limited has committed to working with local fishers in the fishery survey work required as part of the Environmental Monitoring Programme.

Question 79 – What impact will traffic resulting from the project have on the surrounding area?

Answer 79 - The Department of Environment (NI) granted planning permission for a Natural Gas Storage Facility at Islandmagee in October 2012 (Application No: F/2010/0092/F). As part of the grant of permission, conditions were attached to the consent, which included the preparation of a Traffic Management Plan. The traffic management plan sets out a number of coordinated transportation management strategies and describes how they will be used to manage the works. Transportation management strategies for these works include temporary traffic control measures and devices, public information strategies and traffic incident management.

8. Marine Licensing process and period

Question 80 – What aspects of the project are covered by the Marine Licence?

Answer 80 – The Marine Licence application covers all construction below Mean High Water Spring Tide (MHWST). This was described clearly in the Updated 2019 Application. The Department is content that all critical aspects of the construction have been addressed in the application and supporting documentation.

No construction work can commence in the marine area without a Marine Licence and DAERA is the licensing authority in the Northern Ireland marine area.

Question 81 – What is the difference between a “draft” and a “final” Marine Licence?

Answer 81 – A draft licence is issued to ensure that there is clarity between the applicant and Department around all the conditions before the final licence is issued.

Question 82 – What time period does a Marine Licence cover?

Answer 82 – DAERA is not constrained to 3 years or 10 years and can issue a Marine Licence for any time period.

Question 83 – Who will make the Marine Licence decision?

Answer 83 – The decision making for this project is dependent on Departmental processes and ultimately the Minister.

Question 84 – Is a dredging licence required for this project?

Answer 84 – Dredging and disposal of dredge material is not required for this proposal. A small amount of seabed excavation work is required to create a trench within sedimentary seabed deposits for installation of the precast seawater intake arrangement, and also to expose the end of the micro-tunnel used to make the seawater intake. No significant excavation works are intended for the outfall pipeline and diffuser arrangement.

Question 85 – How does the marine licensing process link to the Environmental Impact Assessment (EIA) process?

Answer 85 – The whole project has been subject to Environmental Impact Assessment (EIA) through both the planning and marine licensing processes. The Department has considered the material presented under the Marine Works (EIA) Regulations 2007, as amended 2011. For projects subject to EIA, the Department must consider the material presented in the proposal, the Environmental Statement, any additional information and the results of the consultation, before concluding through an EIA Consent decision. This process must conclude before a Marine Licence can be issued. In this instance, it has been appropriate to consider the three DAERA consents together (Marine Licence, Water Order Discharge Consent and Water Abstraction Licence). All of the relevant material has been posted on the DAERA website.

Question 86 – What are the parameters for determining significant harm, and who determines these?

Answer 86 – The Department has considered all of the information and concludes on this through the Environmental Impact Assessment Consent and the Habitats Regulations Assessment.

Question 87 – Does the Environmental Impact Assessment (EIA) cover decommissioning of the brine infrastructure?

Answer 87 – The Company will require a new marine licence from DAERA to undertake the physical aspects of the decommissioning activity. At that time, a decision will be made as to whether a further EIA will be required for this work.

9. Other documentation that has been requested

The Oxford Analytica report entitled 'Domestic gas storage: The foundation for UK energy flexibility and security' produced for Infrastrata Plc in October 2020 is available online by viewing the following web address: https://wp-infrastrata-2020.s3.eu-west-2.amazonaws.com/media/2020/11/12164644/InfraStrata_Domestic-gas-storage_21-October-2020.pdf

This information has not been used in making the determinations of Marine Licences, Consents or Abstraction Licences.

The HR Wallingford brine dispersion study review – FEED stage produced for Islandmagee Energy Ltd in June 2019 is available online by viewing the following web address: https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/HR%20Wallingford%203rd%20part%20audit%20of%20Brine%20Dispersion%20Model.pdf

The HR Wallingford brine dispersion study review produced for Islandmagee Energy Ltd in April 2013 is available below in PDF format:

HR Wallingford brine model review 2013 Isl

During the consultation, the Department received requests for very specific information. The Department will respond to these consultees individually with the information they have requested in due course.