MARINE LICENCE APPLICATION - SHIPPING & NAVIGATION TECHNICAL NOTE

North Channel Wind

FEBRUARY 7, 2024

NORTH CHANNEL WIND
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Abbreviation	Description
AIS	Automatic Identification System
COLREGs	International Regulations for Preventing Collisions at Sea
DA	Development Area
DAERA	Department of Agriculture, Environment and Rural Affairs
km	Kilometre
m	Metre
MCA	Maritime and Coastguard Agency
MGN	Marine Guidance Note
nm	Nautical Mile
NtM	Notice to Mariners
OWF	Offshore Wind Farm
TSS	Traffic Separation Scheme

1. Introduction

In November 2023, North Channel Wind submitted an application to the Department of Agriculture, Environment and Rural Affairs (DAERA) to conduct surveys for the proposed North Channel Wind 1 floating offshore wind farm between Northern Ireland and Scotland (North Channel Wind, 2023). On the 08 December 2023, DAERA responded requesting further information, noting in particular that "*There is no assessment on Navigational risk relating to this survey method*" (DAERA, 2023, page 3 and page 4).

NASH Maritime has prepared this technical note on behalf of North Channel Wind to address these comments. The key aspects of the Marine Licence Application for which feedback was provided were Section 6.0 which related to wave buoys and Section 8.0 which related to the marine mammal surveys (DAERA, 2023).

This technical note provides a brief overview of the shipping and navigation baseline in proximity to the Development Area (DA), an overview of the embedded risk controls for the survey work in question and an assessment of the impacts to shipping and navigation as a result of the survey work. Marine Guidance Note (MGN) 654, issued by the Maritime and Coastguard Agency (MCA) is the primary UK guidance used to assess navigational risk of offshore renewables (MCA, 2021). Whilst this application relates to survey work, guidance from MGN654 has been taken into consideration throughout this technical note. MGN654 notes that "*the scope and depth of the developer's assessment, together with the tools and techniques necessary to carry this out, should be proportionate to the scale of the development and magnitude of the risks*". Therefore, in the context of surveys, full compliance with MGN654 is not required and a proportionate risk assessment is considered to involve evaluating the potential risks associated with the use of survey equipment and determining whether appropriate control measures are in place.

2. Description of Survey Equipment to be Deployed

As described within Section 6.0 and Section 8.0 of the Survey Method Statement (North Channel Wind, 2024), one wave buoy and up to two CPODs or FPODs will be required for the wave survey and marine mammal surveys respectively. Two Acoustic Doppler Current Profilers in seabed frames to measure waves, water levels, and currents will also be deployed as part of the survey, however as these are anticipated to be bottom mounted in deep water, no navigational concerns were raised regarding these within the DAERA response. A surface marker buoy may be used but it will be small and plastic, posing negligible risk or impact to navigating vessels.

The wave buoy is planned for deployment within the DA for a duration of 12 months. The buoy will be anchored to the seafloor using a mooring system designed to withstand the local wave and current conditions. The buoy will have a diameter of up to 1.2m, and therefore is of sufficient size to pose a potential hazard to navigation, and will feature a flashing obstruction light (see **Table 1**). The mooring system will consist of rubber bungee cords connected to a swivel affixed to the underside of the buoy. At the opposite end, the bungee is coupled with a high tensile mooring line or chain, supplemented with inline floats and weights. These components are all connected to a sinker weight with dimensions of approximately 1m x 1m.

Continuous Porpoise Detectors (CPODs) are bottom weighted passive acoustic monitoring devices. The CPODs/FPODs will be recovered every three months to download data and change batteries. Upon each three-month recovery they may be relocated so that over the 12-month monitoring period CPODs/FPODs will be deployed at locations across the site. The exact locations of the CPODs/FPODs have not being determined yet. Either two permanent sites will be selected, or the two sites will be relocated every three months (during battery change) based on a 4km x 4km survey grid across the site. A surface marker buoy may be used but it will be small and plastic, posing negligible risk or impact to navigating vessels.

In addition, undertaking these survey campaigns will require the use of survey vessels and installation vessels operating within the DA. These are described within the Survey Method Statement (North Channel Wind, 2024).

This technical note primarily considers the impacts associated with the wave buoy as the principal piece of survey equipment with a substantial surface element which could pose a hazard to navigation.

3. Description of Marine Environment

3.1. Key Navigational Features

The North Channel Wind 1 Offshore Wind Farm (OWF) is located 12.6nm from the Northern Irish coast within waters with depth between 110m and 160m, and the DA covers an area of approximately 176km^2.

The Traffic Separation Scheme (TSS) in the North Channel is located 9nm north-west of the DA. The International Regulations for Preventing Collisions at Sea (COLREGs) Rule 10 prescribes actions to be taken by vessels when navigating through or in the vicinity of a TSS. This dictates the routes taken by most commercial vessels through near to the DA.

Larne Port is located approximately 9nm south of the DA. The port is primarily used for the P&O Ferries routes that operate in this area with limited other general cargo use on an ad-hoc basis. Larne Port has a fishing and recreational community with several clubs making use of Larne Lough and the wider area. Belfast Port is located approximately 24nm south of the DA and is predominantly used by passenger and cargo vessels.

Navigational aids in proximity to the OWF location include the East Maiden lighthouse and the buoy at Hunter Rock. Both aids to navigation serve the purpose of marking shallow waters so vessels can safely route around.

No aggregate extraction, oil and gas or other offshore wind farm licences or proposals are identified in proximity to the DA.

3.2. Marine Traffic Summary

Data from the Automatic Identification System (AIS) for August 2019 and January 2020 was used to characterise vessel routes through or adjacent to the DA. An overview of the vessel density in relation to the DA is shown in **Figure 1**. Commercial vessel transits are presented within **Figure 2** and **Figure 3**. There were 435 commercial vessel transits that intersected the DA during the two months of analysis, equating to approximately 2,610 vessel transits per year. In the immediate vicinity of the DA, most routes are north-west / south-east as vessels are transiting the TSS in the North Channel on coastal shipping routes. To the south-east of

the array area there is an increased density of vessels due to the approaches to Larne Port, Belfast and the Firth of Clyde.

Two ferry routes are evident to the south-east of the array area (**Figure 3**). 1.5 nm to the south-east is the Larne to Cairnryan route operated by P&O Ferries with six crossings per day. 6 nm to the south-east is the Belfast to Loch Ryan route operated by Stena conducting five crossings per day.

The highest concentration of fishing activity was observed to the east of the DA, inshore along the Scottish coast between Loch Ryan and the entrance to the Firth of Clyde, as can be seen in **Figure 4**. There are several fishing vessel transits through the DA between Larne/Belfast and the north-eastern traffic lane of the TSS in the North Channel.

There is relatively little recreational activity through the DA, as shown in **Figure 5**. Recreational vessels tend to transit close to the coast where the waters are more sheltered and avoiding interaction with larger vessels. Offshore cruising routes through the DA include routes between Belfast Lough and Campbeltown, Glenarm and the Firth of Clyde, and Belfast Lough and the Sound of Jura.

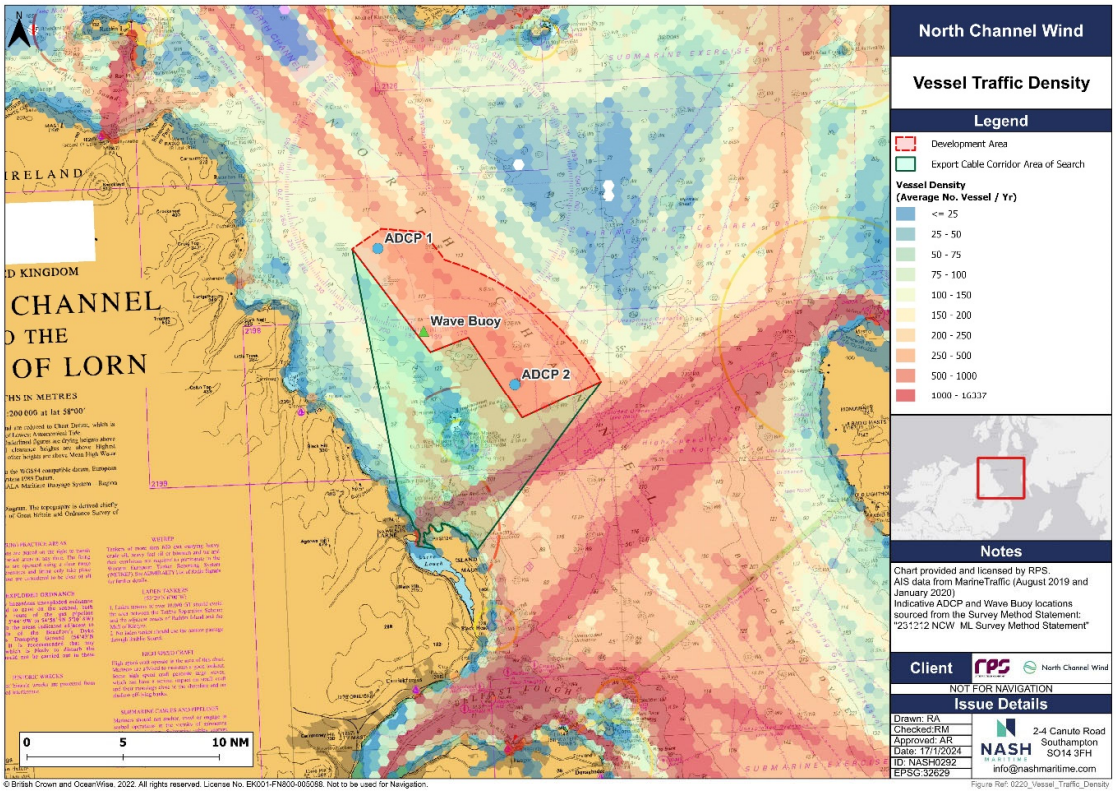

Figure 1: Vessel Traffic Density in proximity to DA (August 2019 & January 2020).

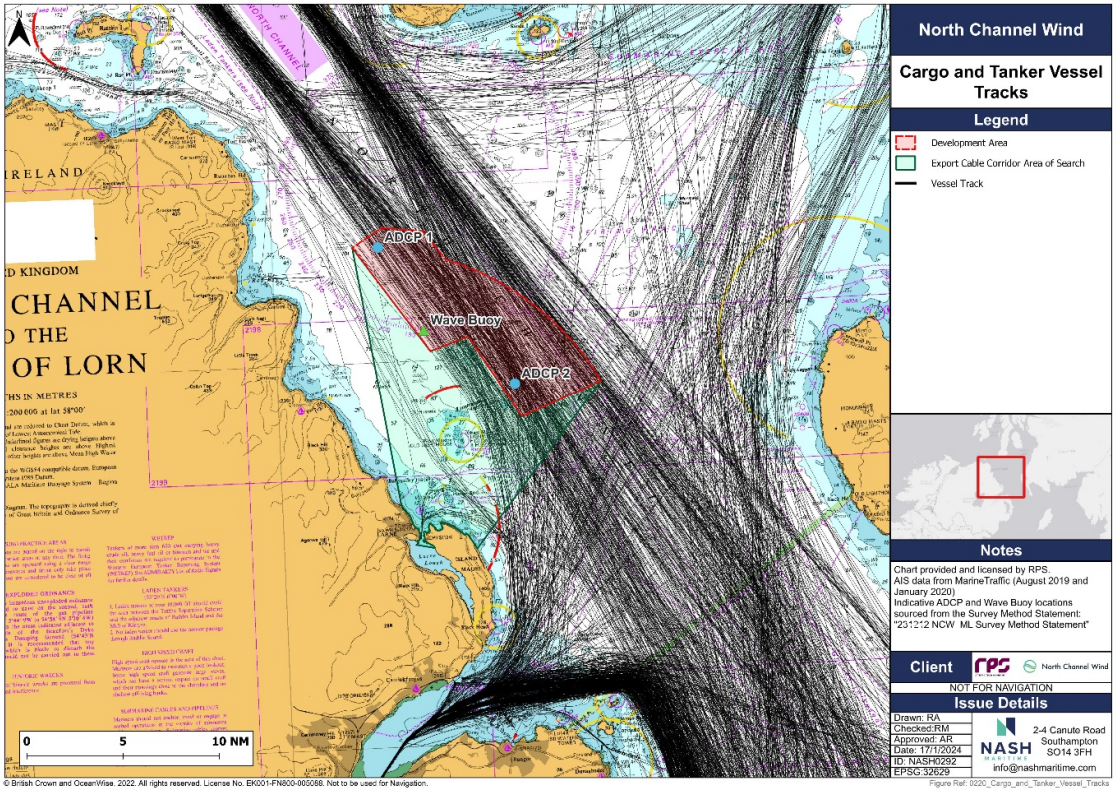

Figure 2: Cargo and Tanker Vessel Traffic Activity in proximity to DA (August 2019 & January 2020).

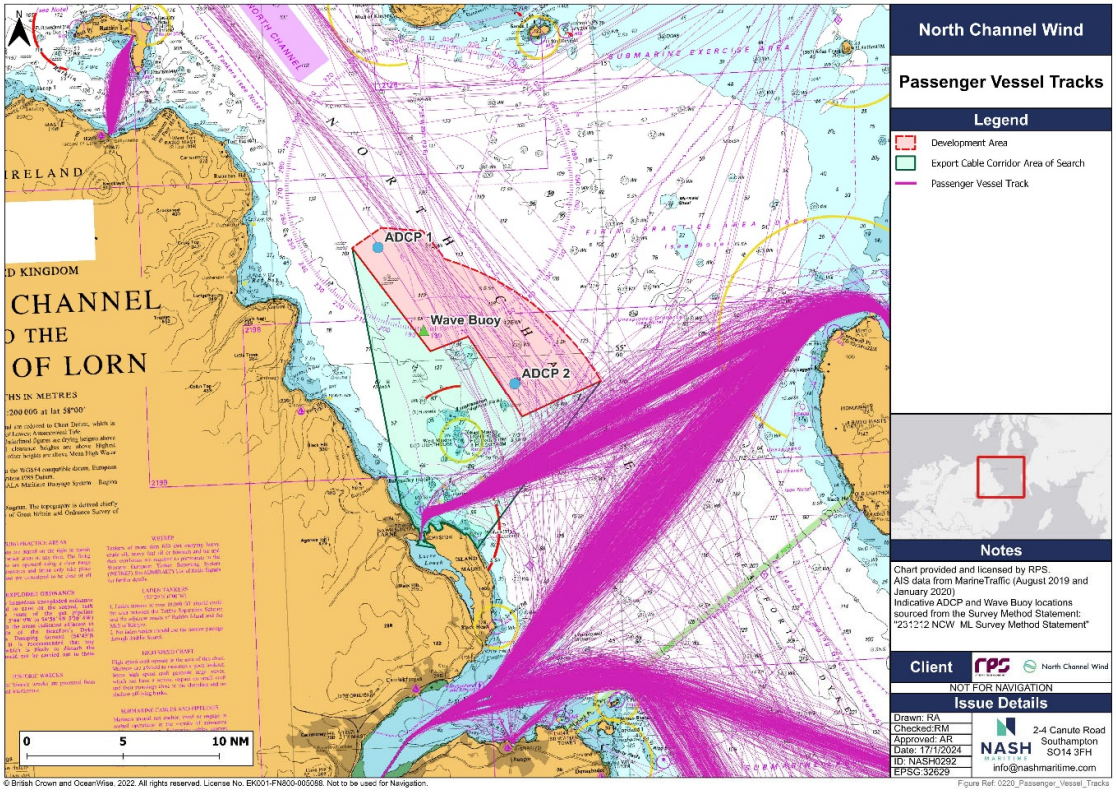

Figure 3: Passenger Vessel Traffic Activity in proximity to DA (August 2019 & January 2020).

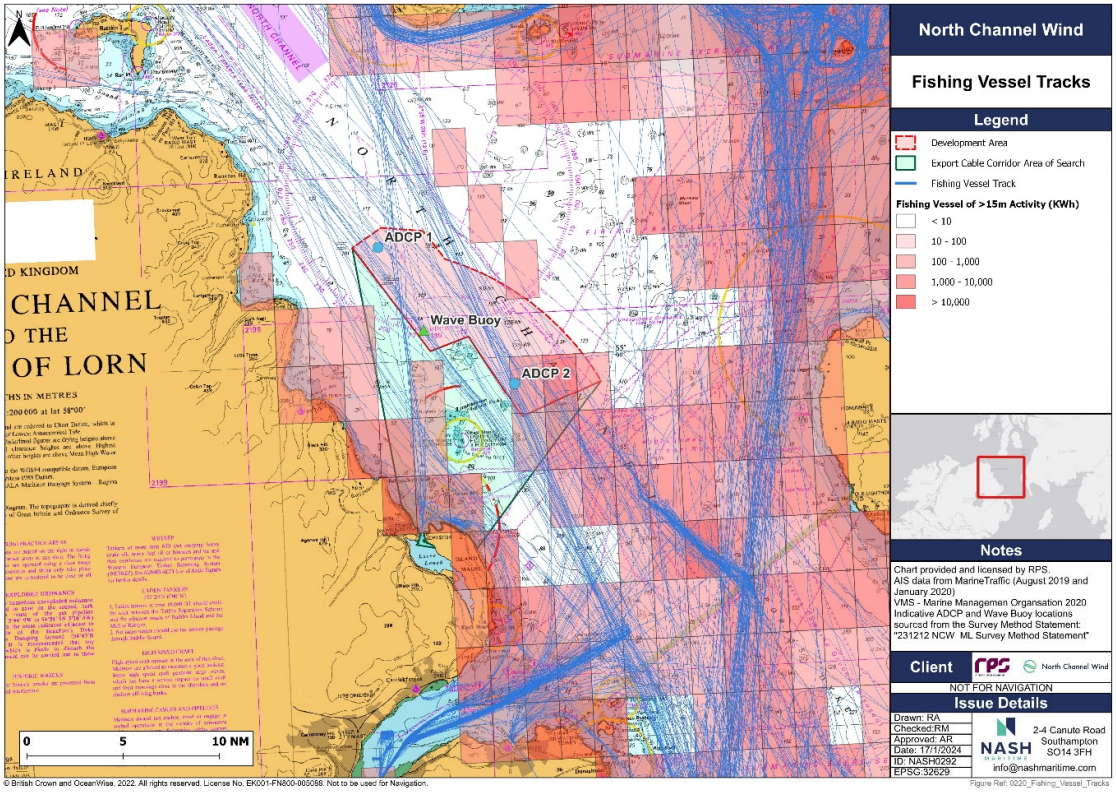

Figure 4: Fishing Vessel Activity in proximity to DA (August 2019 & January 2020).

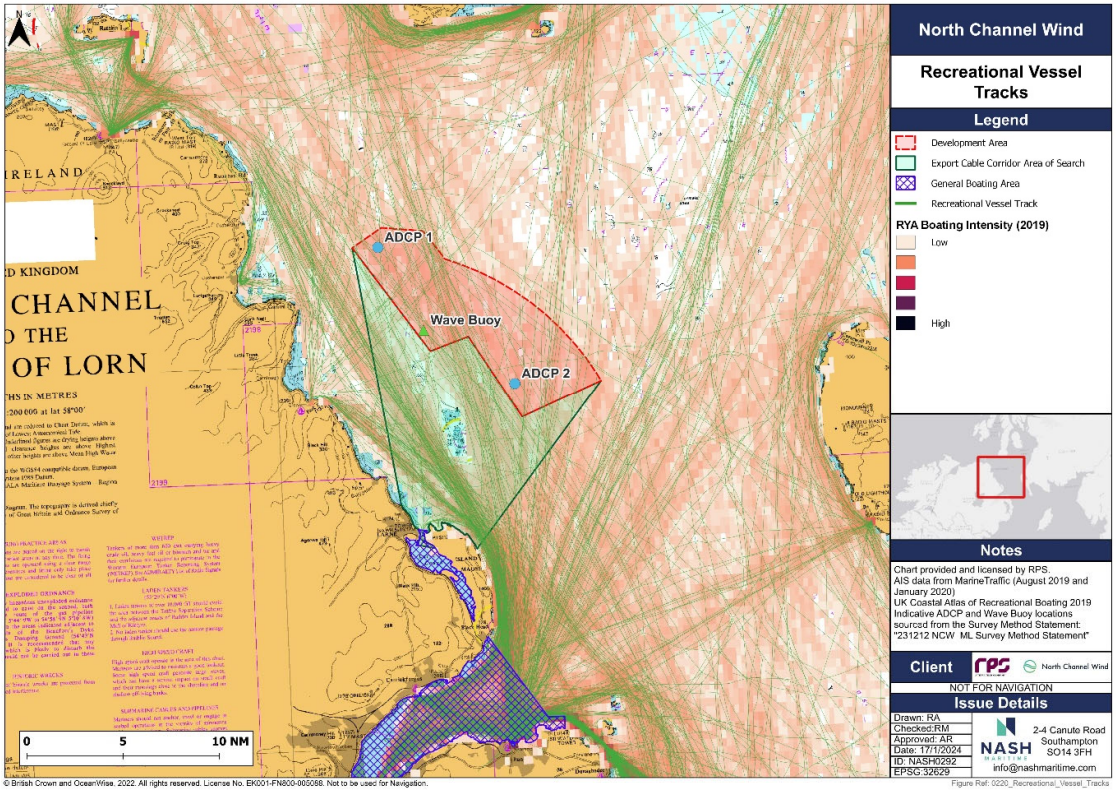

Figure 5: Recreational Vessel Activity in proximity to DA (August 2019 & January 2020).

4. Embedded Risk Controls

A number of risk controls for the wave buoy are described within the Survey Method Statement (North Channel, 2024). Some of these risk controls may be applied more generally to other survey activities where appropriate. Collectively these embedded risk controls would minimise risks and impacts to vessel traffic and are described in **Table 1**.

Table 1: Embedded Risk Controls (wave buoy).

ID	RC Description	Further Details
1	Lighting and marking of buoyage.	Lighting and marking to be agreed with Commissioner of Irish Lights. It is likely that the buoy will be marked as follows at all times: • Coloured yellow from at least the water-line to the top of the buoy. • Have a yellow, flashing light character that is visible through 360 degrees with a 5 nm range • Surmounted by a yellow 'x' shape topmark The buoy may also be required to meet the following International Association of Marine Aids to Navigation and Lighthouse Authorities availability standards: • Position – category 2 (not less than 99%). • Light – Category 2 (not less than 99%) • Daymark – Category 2 (not less than 99%) • Topmark – Category 2 (not less than 99%). Requirements to notify the Commissioner of Irish Lights on the availability of aids to navigation may also be required prior to works commencing.
2	Marking on nautical charts.	A notification will be sent to UK Hydrographic Office of completion of the licensed activities, within a specified time period after their completion. The information provided will include latitude and longitude coordinates in WGS84 (ETRS89) datum of the installed works on and/or above the seabed, any changes to engineering drawings or changed aids to navigation where applicable.
3	Promulgation of information.	Local mariners and fishermen's organisations will be made fully aware of the activity through a local Notice to Mariners (NtM). This will be issued at least five days before the commencement of the works.
		His Majesty's Coastguard will be notified prior to commencement of activities.
		The local MCA Marine Office, in this case belfastmo@mcga.gov.uk will be notified before commencement of the works.

ID	RC Description	Further Details
		Updated NtM and Kingfisher notices if/when survey equipment is relocated.
		Information will also be provided to local ports and harbours to ensure awareness of survey activities.
4	Operations and Maintenance Plan.	Routine maintenance activities will be undertaken to ensure the integrity and ongoing functionality of the mooring system and LED lights, as well as to confirm the battery status.
5	Construction / installation methodology and weather limits.	A construction method statement will be developed. It is anticipated that all works will only take place in suitable metocean conditions.
6	Spare mooring components will be available on the survey and maintenance vessels.	Spare components available as necessary in case a fault is identified during routine maintenance.
7	Installation vessel standards/compliances	All vessels will comply with the latest International Maritime Organisation Safety of Life at Sea and environmental requirements for their classification and with any national requirement of the territorial or offshore waters to be operated in.
8	Emergency Response Co-ordination Plan (ERCoP)	Production of an ERCoP in case of an incident requiring emergency response in the vicinity of the works and survey equipment.
9	Guard vessels	Use of guard vessels where necessary during equipment installation or retrieval to warn passing vessels of survey/installation vessels.
10	Monitoring of AtoNs	Commissioner of Irish Lights will be notified of any failure of the aids to navigation including timescales and plans for remedying such failures, as soon as possible and no later than 24 hours following the detection of any such failure.
11	Decommissioning	The survey equipment will be fully decommissioned and removed from the DA and notification given to the UK Hydrographic Office.
12	Loss of Station Protocol	In the unlikely event that the survey equipment becomes damaged or breaks free from its moorings, a suitable plan will be in place to notify local mariners and retrieve the equipment.

5. Impacts of Navigational Safety

Based on the method statement (North Channel Wind, 2024) and a review of the DA, the following potential impacts on shipping and navigation identified as a result of the survey equipment are listed below. As described in **Section 2**, the primary impacts to navigation are associated with the wave buoy rather than other survey campaigns or bottom mounted equipment (such as the ADCP/CPOD/FPOD surveys).

5.1. Allision Risk

The installation of survey equipment in otherwise navigable waters introduces a potential risk of allision (contact) with passing vessels. These have been considered separately for large commercial vessels and small craft such as fishing vessels or recreational vessels.

The DA lies within an area of busy large commercial traffic with vessels transiting to and from the TSS in the North Channel (see **Figure 2**). The majority of traffic using this route are clear to the east of the proposed deployment location of the wave buoy. There is a risk that one of these vessels fails to see the metocean buoy and contacts it. This is likely to result in heavy damage to the equipment but only minor damage to the vessel. The embedded mitigations include promulgation of information, marking of equipment on nautical charts and the lighting and marking of the buoys as described in **Table 1**. Therefore, passing vessels should be well aware of the presence of the survey equipment, reducing the likelihood of occurrence, and having adequate searoom to avoid it. On the basis that the area has a relatively high commercial traffic density, the consequence of allision is minor and that there are suitable mitigations in place, the impact on allision risk to large commercial vessels is considered to be **Low**.

Figure 4 and **Figure 5** show that there is some fishing and recreational vessel activity around the DA and they may similarly strike the wave buoy through human error or mechanical failure. Smaller vessels such as fishing or recreational vessels have a higher potential for damage following an allision with the proposed survey equipment. A striking at speed could therefore breach the hull and cause the sinking of the vessel in a worst credible situation. The most likely outcome is minor damage that would enable the vessel to return to harbour for repairs. The embedded mitigations include promulgation of information, marking of equipment on nautical charts and the lighting and marking of the buoys as described in **Table 1**. Therefore, passing vessels should be well aware of the presence of the survey equipment, reducing the likelihood of occurrence. On the basis that the area has a relatively low small boat traffic density, the consequence of allision is potentially high but that there are suitable mitigation in place, the impact on allision risk to small craft is considered to be **Low**.

5.2. Collision Risk

The survey activities could increase the risk of two vessels colliding with one another. This risk can be increased when vessels are required to route around an obstruction or where navigable searoom is decreased. Given the small footprint of the equipment, the impact on vessel navigation is not anticipated to be significant nor to greatly reduce searoom available for navigation. Furthermore, the density of traffic is not so high that vessels will frequently meet one another within the vicinity of the survey equipment. Therefore, the likelihood of a resulting collision is considered to be **Negligible**.

A vessel-to-vessel collision could also occur between a passing vessel (such as a commercial, fishing or recreational craft) and the installation vessel. Human error or mechanical failure could result in a passing vessel colliding with the survey vessel whilst it is conducting operations within the DA. Were the colliding vessel large, it could result in extensive damage, injuries or fatalities. However, the risk controls identified within **Table 1**, including the promulgation of information and installation vessels standards/compliances would significantly reduce the likelihood of this occurrence. Furthermore, some survey vessels are restricted in manoeuvrability, and the COLREGS require that vessels use the correct lighting and signalling in order to notify other marine users the need to keep clear. The possible use of guard vessels would further mitigate this, particularly for smaller craft. Hence, the risk of vessel-to-vessel collision is considered to be **Low**.

5.3. Breakout

The potential impact to vessel traffic if a buoy were to break loose was identified which could pose a hazard to other navigating vessels. This could result from either a mechanical defect, adverse weather or being struck by a vessel. Were the buoy to breakout, the likelihood of it striking another vessel is very low and it is more likely to either sink or wash ashore. **Table 1** and the Survey Method Statement identify that the equipment will be suitably moored for the prevailing conditions and maintained to reduce such an occurrence. Furthermore, the marking and lighting arrangements should still maintain visibility were it to breakout until it could be recovered. Given the remote likelihood of the buoy breaking free as well as the embedded mitigations, the impact is considered to be **Negligible**.

5.4. Snagging

Snagging of fishing gear or anchors on subsea equipment could pose a risk of capsize should the gear become fast. The highly localised nature of this equipment, coupled with the embedded mitigations listed within **Table 1** such as promulgation of information, marking of equipment on nautical charts and lighting and marking of the buoys should avoid this occurrence. The impact on vessel gear/anchor snagging on the mooring system for the buoys is considered to be **Low**.

5.5. Summary

A summary of the potential impacts and their risk on vessel traffic arising from the presence of the survey equipment are presented in **Table 2**.

Table 2: Summary of Potential Impacts on Vessel Traffic

ID	Potential Impact Description	Assessment of Impact
1	Allision risk to large commercial vessels	Low Risk
2	Allision risk to small craft (fishing and recreational)	Low Risk
4	Collision between passing vessels	Negligible Risk
5	Collision with survey/installation vessel	Low Risk
6	Breakout	Negligible Risk

ID	Potential Impact Description	Assessment of Impact
7	Snagging	Low Risk

6. Conclusions and Summary

This technical note assesses the risks to shipping and navigation of the proposed survey campaigns associated with the North Channel 1 offshore wind farm, including a wave buoy and up to two CPODs or FPODs.

The key navigational feature within the area is the TSS in the North Channel. The vessel traffic in proximity to the survey equipment proposed within the North Channel DA consists predominantly of commercial vessels travelling to and from the TSS in the North Channel. Fishing and recreational activity were both comparatively low within the DA.

Risk control measures were identified for the installation, duration of deployment and retrieval of the survey equipment that were considered to be industry best practice.

Taking into account the key features in the area, the baseline marine traffic in the area and the embedded risk control measures, all impacts were assessed to be Low or Negligible Risk as presented in **Table 2**.

7. References

DAERA (2023). Letter to North Channel Wind Re: Marine Construction Works License Application. Ref: ML2023019.

MCA (2021). Marine Guidance Note 654: Safety of Navigation: Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response.

North Channel Wind (2024). Marine Licence Application – Survey Method Statement.