



BERWICK BANK WIND FARM OFFSHORE ENVIRONMENTAL IMPACT ASSESSMENT

APPENDIX 13.2: SHIPPING AND NAVIGATION ROAD MAP

BERWICK BANK WIND FARM EIA ROAD MAP

Shipping and Navigation



EOR0766
Road Map - Shipping and
Navigation
Final

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
FINAL	Final	Anatec	RPS	RPS	17/10/2022

Approval for Issue

Ross Hodson *RA Hodson* 17 October 2022

Prepared by: **Anatec**
 Prepared for: **SSE Renewables**
 Checked by: **Kerr MacKinnon**
 Accepted by: **Douglas Watson**
 Approved by: **Ross Hodson**

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1 AIMS, SCOPE AND FORMAT OF THE ROAD MAP

1.1 Background and Aims

Phase 2 of the former Firth of Forth Zone includes Berwick Bank Wind Farm for which consents and licences (as set out below) are being sought. This Project includes both the offshore wind turbine generators (hereafter referred to as wind turbines) and associated offshore infrastructure, as well as onshore grid connection and associated infrastructure.

The Shipping and Navigation Road Map covers assessment in relation to the Berwick Bank Wind Farm, seaward of Mean High Water Springs (MHWS). This Road Map does not consider onshore impacts of onshore infrastructure (landward of MHWS). Consent and licence applications for the onshore and offshore components of the Project are being submitted separately. The offshore components of the Project are hereafter referred to as 'the Proposed Development'.

Key components of the Proposed Development include:

- wind turbines;
- wind turbine foundations;
- inter-array cables;
- offshore substation platforms (OSPs)/Offshore convertor station platforms; and
- offshore export cables.

The Proposed Development requires the following consents, licences and permissions:

- a Section 36 consent under the Electricity Act 1989;
- a marine licence under the Marine and Coastal Access Act (MCAA) 2009;
- a marine licence under the Marine (Scotland) Act 2010 for the part of the offshore export cables which is within 12 nautical miles (nm) of the coast; and
- planning permission under the Town and Country Planning (Scotland) Act 1997 for all infrastructure located landward of Mean Low Water Springs (MLWS) and seaward of MHWS.

The aim of this Shipping and Navigation Road Map is to support reached agreement with key stakeholders on the information provided by SSE Renewables (hereafter referred to as "the Applicant") in relation to shipping and navigation (associated with potential impacts on shipping and navigation receptors) Environmental Impact Assessment (EIA), as part of the Section 36 Consent Application and Marine Licence Applications for the Proposed Development. This Shipping and Navigation Road Map documents discussions and agreements between the Applicant and the key stakeholders listed in section 2.

This Shipping and Navigation Road Map seeks to ensure that the information supplied in the consent Applications listed above are compliant with the requirements of the following regulations, hereafter referred to as the EIA Regulations:

- Section 36 consent application: The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- marine licence application: The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and The Marine Works (Environmental Impact Assessment) Regulations 2007; and
- a planning application: The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

Other primary guidance documents considered include:

- *Marine Guidance Note (MGN) 654 Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response* and its annexes (Maritime and Coastguard Agency (MCA), (2021)); and
- *Revised Guidelines for Formal Safety Assessment (FSA) for Use in the Rule-Making Process* (International Maritime Organization (IMO), 2018);

Additionally, other guidance documents considered (but not primary) include:

- *International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O-139 on the Marking of Man-Made Offshore Structures* (IALA, 2021);
- *IALA Guidance G1162 The Marking of Offshore Man-Made Structures* (IALA, 2021);
- *The Royal Yachting Association's (RYA) Position on Offshore Renewable Energy Developments: Paper 1 (of 4) – Wind Energy* (RYA, 2019);
- *Guidance on the Interaction between Offshore Wind Farms and Maritime Navigation* (Permanent International Association of Navigation Congresses (PIANC), 2018).

As part of engagement in the Shipping and Navigation Road Map, it was envisaged that the Applicant and key stakeholders would:

- provide information in a timely manner;
- be transparent and consistent in provision of advice;
- provide effective involvement in the stakeholder engagement process;
- aim to adhere to the programme of meetings set out in this Road Map (see section 3); and
- seek to identify any issues or additional data requirements as early as possible.

The Applicant is seeking in this Road Map to provide an accurate record of meetings held, discussions undertaken and points of agreement relating to the offshore EIA shipping and navigation assessment up to the point of Application.

1.2 Scope

The Shipping and Navigation Road Map was used as a tool to facilitate early and on-going engagement with key stakeholders, throughout the pre-application phase of the Proposed Development up to the point of Application submission. This included consultation on the developing baseline characterisation, marine traffic survey data analysis, assessment of risk, and development of the final application documentation. This Shipping and Navigation Road Map was a 'live' document which was used to reach and record points of agreement, for example on scoping impacts out of the EIA, and agreeing the level of assessment that were presented for impacts scoped into the EIA, so that the focus in the assessment documents in support of the Application are on likely significant effects as defined by the EIA Regulations.

The Shipping and Navigation Road Map sought to agree the following as a minimum, however additional points of agreement/discussion were required, and these were discussed with key stakeholders and documented within this Road Map:

- hazards expected to occur within and in proximity to the Proposed Development;
- key issues that require to be assessed in the EIA;
- data sources to be used to inform the baseline characterisation;
- shipping and navigation future baseline;
- method(s) of data analysis including methodology to be used for the Navigation Risk Assessment (NRA);
- project design envelope and maximum design scenario to be assessed;
- the relevant shipping and navigation users and evidence available on potential risk;
- approach to EIA, including the determination of significance of risk; and
- potential measures which could be applied to mitigate the significance of risk.

For all the above, the Shipping and Navigation Road Map sought to record key areas of agreement and/or outstanding points of discussion.

Vessel traffic survey scopes have been agreed through consultation with stakeholders and are briefly summarised in Annex A: Marine Traffic Survey Scope.

1.3 Format

Figure 1.1 outlines the key stages of the EIA process, and how the Shipping and Navigation Road Map has facilitated engagement during key stages and steps.

The remainder of the Shipping and Navigation Road Map is set out as follows:

- section 2: identifies the key stakeholders to the Shipping and Navigation Road Map;
- section 3: outlines the shipping and navigation EIA programme for Proposed Development; the programme of shipping and navigation meetings. It includes a record of meetings that have taken place in relation to the shipping and navigation EIA assessment; and
- section 4: provides a summary of discussion, areas of agreement and areas of outstanding discussion in relation to the shipping and navigation EIA assessment. The aim was to have as few areas of disagreement remaining as possible at the point of Application submission.

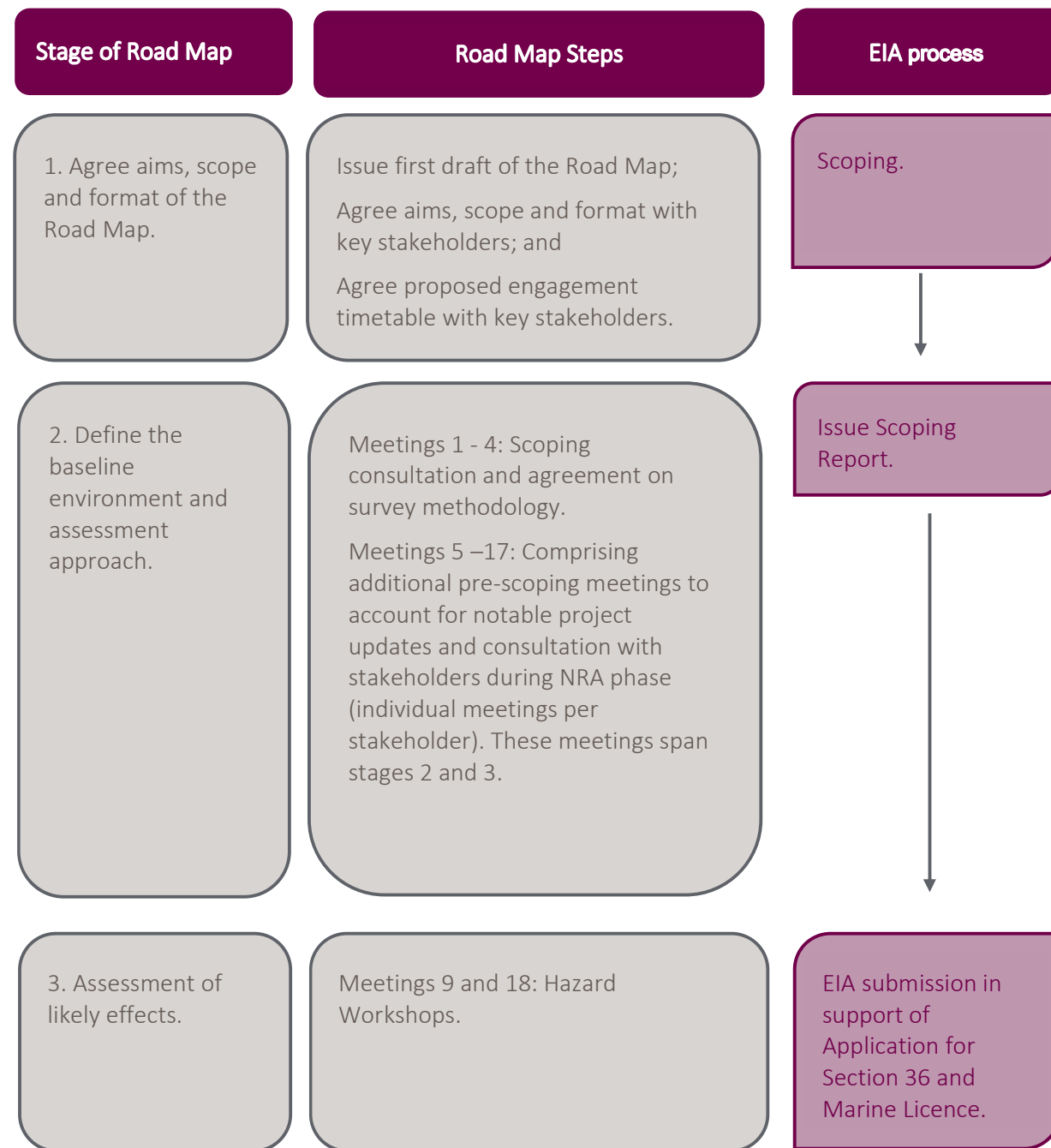


Figure 1.1: Key Stages of the Proposed Development

2 KEY STAKEHOLDERS

The aims of the Shipping and Navigation Road Map have been achieved through engagement with the following key stakeholders:

- Cruising Association (CA);
- Forth Ports;
- Montrose Port;
- other port and harbour operators in the area;
- MCA;
- Northern Lighthouse Board (NLB);
- Royal National Lifeboat Institution (RNLI);
- RYA Scotland;
- regular vessel operators (input into the Hazard Workshop); and
- United Kingdom (UK) Chamber of Shipping.

This has been determined following initial agreement on key assessment issues. Table 2.1 sets out the remit, role in the EIA processes and the key contact(s) for each of the stakeholders listed above.

In addition, fisheries representatives were in attendance at Hazard Workshops.

Table 2.1: Remit, Role and Contact for Key Stakeholders Associated with the Shipping and Navigation Road Map

Stakeholder	Remit	Role in EIA process	Contact(s)
CA	Mutually supportive association dedicated to those who cruise on small boats.	Non-statutory consultee	Derek Lumb
Forth Ports	Forth Ports is the largest port group in Scotland, operating seven strategically located ports, acting as major industry hubs.	Non-statutory consultee	Alan McPherson/Scott Cameron
MCA	Produce legislation and guidance on maritime matters and provide certification to seafarers.	Statutory Advisor to Marine Scotland Licensing - Operations Team (MS-LOT)	Nick Salter
NLB	Under Section 193 of the Merchant Shipping Act 1995, the Commissioners of Northern Lighthouses are appointed as the General Lighthouse Authority for Scotland and its adjacent seas and islands, in addition to the Isle of Man. Under Section 195 of the act, vested with responsibility for the superintendence and management of all associated lighthouses, buoys and beacons.	Statutory Advisor to MS-LOT	Peter Douglas/Adam Lewis
RNLI	A charity which provides 24-hour lifeboat search and rescue service and a seasonal lifeguard service.	Non-statutory consultee	Richard Johnson/Simon Ling
RYA Scotland	A membership organisation charged with looking after the interests of individuals, clubs, training centres and affiliates of the RYA in Scotland, and the recognised governing body for sailing in all forms in Scotland.	Non-statutory consultee	Graham Russell

Table 3.2: Programme for Stakeholder Engagement: Shipping and Navigation

Detail	2020			2021			2022												
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	
Stage 1: Agree aims, scope and format of the Shipping and Navigation Road Map.																			
Meetings 1 - 4: Scoping consultation and agreement on survey methodology.																			
Stage 2: Define the baseline environment and assessment approach.																			
Meetings 5 –17: Comprising additional pre-scoping meetings to account for project updates and consultation with stakeholders during NRA phase (individual meetings per stakeholder). ¹																			
Stage 3: Assessment of likely effects.																			
Meeting 9 and 18: Hazard Workshops.																			

3.3 Record of Shipping and Navigation Meetings

Table 3.3 records the meetings that have taken place, the attendees and the key discussion points in relation to the shipping and navigation Offshore EIA assessments. This table (and link to reference material) was updated after each meeting and circulated to all attendees as a record of the meeting and the key points of discussion. Table 3.3 does not record full minutes, however a meeting minute reference is provided for each meeting in this table and meeting minutes will be circulated following each meeting.

Table 3.3: Record of Shipping and Navigation Meetings Undertaken as part of the Shipping and Navigation Road Map

Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
01-SN	Pre-scoping	09 June 2020	MCA	Inform the Scoping stage of the Proposed Development and discuss the plans for the vessel traffic surveys given the COVID-19 pandemic restrictions at the time.

¹ These meetings span stages 2 and 3

Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
02-SN	Pre-scoping	10 June 2020	NLB	Inform the Scoping stage of the Proposed Development and discuss the plans for the vessel traffic surveys given the COVID-19 pandemic restrictions at the time.
03-SN	Pre-scoping	12 June 2020	Forth Ports	Inform the Scoping stage of the Proposed Development and discuss the plans for the vessel traffic surveys given the COVID-19 pandemic restrictions at the time.
04-SN	Email correspondence	8 July 2020	MCA	MCA content with the intended approach to vessel traffic surveys.
05-SN	2020 Berwick Bank Wind Farm Scoping Opinion	9 March 2021	MCA, UK Chamber of Shipping	MCA noted that the likely cumulative and in combination effects on shipping routes should be considered, taking into account the proximity to other offshore wind farm developments including Inch Cape, Neart na Gaoithe (NnG) and Seagreen, and the impact on navigable sea room. Additionally, the proximity to other offshore wind farms in close proximity will need to be fully considered, with an appropriate assessment of the distances between boundaries and shipping routes as per MGN 543 [superseded by MGN 654]. An NRA will need to be submitted in accordance with MGN 543 [now superseded by MGN 654] (and MGN 372) and the MCA Methodology and should be accompanied by a detailed MGN 543 [now superseded by MGN 654] Checklist. UK Chamber of Shipping recognised and agreed that summer 2020 data may not be representative of normal traffic levels due to the COVID-19 pandemic and suggest caution and supplementary data from 2019 or future years is necessary. Some concerns over the potential deviation required by east-west commercial traffic.
06-SN	Interim MCA meeting	28 April 2021	MCA	Interim Project update, an overview of the vessel traffic survey data, NRA methodology and a discussion on the next steps. MCA agreed that assessment and survey undertaken to date was appropriate.
07-SN	Interim Forth Ports meeting	24 August 2021	Forth Ports	No specific considerations in relation to future case traffic volumes.
08-SN	Regular Operator correspondence	27 September 2021	Evergas	The Proposed Development array area will have an impact on routeing, especially for vessels coming from the north with increases in passage distance of approximately 30 nm.

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Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
09-SN	First Hazard Workshop	28 September 2021	Forth Ports, CA, MCA, NLB, RNLI, RYA Scotland, Scottish Fishermen's Federation (SFF), Fishermen's Mutual Association (FMA)	<p>Forth Ports - Smaller vessels could pass west of all the offshore wind farm developments if considered a less risky option but for tankers the water depth would be an additional consideration. If vessels are forced to pass west of all the offshore wind farm developments, then Forth Ports will have to contact vessels asking for intentions.</p> <p>Also, there were approximately 120 cruise vessels into the Forth and Tay in 2019 compared with none in 2020 and few in 2021. There are currently 125 booked up for 2022 and therefore 2019 is the most accurate year for passenger vessel data.</p> <p>CA - There are 22,000 fishing spots along the coast between Arbroath and Montrose and so up to 2 nm out to sea is a no-go zone for recreational vessels. The potential for potters to push recreational craft in the array to where commercial vessels are is a cause for concern.</p> <p>MCA queried whether deviations due to the presence of Seagreen will be included in the baseline.</p> <p>Suggested an adjustment to the north-west boundary of the Proposed Development array area should be considered to allow vessels more space in between the Proposed Development array area and Inch Cape.</p> <p>NLB - Large vessels would be more comfortable passing outside to the east of all the offshore wind farm developments, but smaller vessels could come inside between the Proposed Development array area and Inch Cape.</p> <p>RNLI - Changes relating to where incidents occur (due to the channelling of vessel traffic) may have a bearing on the future location of Search and Rescue (SAR) assets.</p> <p>RYA Scotland - The RYA Coastal Atlas is the highest quality dataset available for recreational vessel movements for which the COVID-19 pandemic (and possibly European Union (EU) Exit) has had a large effect.</p> <p>Weather is very impactful for recreational vessels and only 20% are currently transmitting via Automatic Identification System (AIS).</p> <p>A focus of commercial vessels through the gap between the Proposed Development array area and Inch Cape may discourage recreational vessels from navigating in proximity.</p>

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Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
				<p>SFF/SMA - Too many fishing vessels will be forced into the corridor between Inch Cape Offshore Wind Farm and the Proposed Development which will have to be shared with commercial vessels.</p> <p>Commercial vessels will be displaced west of Inch Cape Offshore Wind Farm, and they would pass west of the offshore wind farms when transiting in the area for safety as the area closer to the offshore wind farm will be unsafe in bad weather.</p> <p>There is pressure on commercial vessels to take the shortest possible route to move towards net zero carbon emissions and it is unlikely that they will take the long way around.</p> <p>In winter, due to the swell and waves while fishing, it will not be possible for fishing vessels to transit through the Proposed Development array area but that due to the cumulative effects of other offshore wind farms in the area, a lot of small vessel traffic will be pushed inside the Proposed Development array area. There will be risks there with winds coming from different directions and boats unable to go in broadside.</p> <p>Commercial vessels will not go through the Proposed Development array area and will be pushed into fishing grounds (particularly at night).</p>
10-SN	Email correspondence	5 October 2021	Evergas	<p>As a gas carrier, significant precaution is taken including allowing for unforeseen machinery failure. Therefore, keeping close to shore or utilising the navigation corridor between the Proposed Development array area and Inch Cape would result in a difficult situation in such an event. The longer alternative is considered safer and would be used.</p>
11-SN	Email correspondence	26 October 2021	UK Chamber of Shipping	<p>There is growing concern for the narrow channel between the Proposed Development array area and Inch Cape leading to vessel traffic either passing east or west of both developments. A change to the western boundary of the Proposed Development array area to create a wider and more meaningful channel for north-south traffic is suggested.</p>
12-SN	Regular Operator correspondence	15 December 2021	Intrada Ship Management	<p>In good weather some vessels on voyage to/from Inverness will make passage across Seagreen and the Proposed Development array area; hence there will be some deviation (plus increased steaming time, more fuel, potentially a missed tide with resultant lost time).</p> <p>In adverse weather the vessels tend to be closer to the coast but Inch Cape and NnG have potential to limit the options to the Master for safe passage.</p> <p>There is a pinch point between Inch Cape and the Proposed Development array area forcing traffic to be closer than necessary and increasing the risk of close quarters navigation, or worse (collision along with environmental impacts than can create, let alone injury/life).</p> <p>In adverse weather this pinch point will be even worse. Vessels are slow to respond in adverse weather needing more sea room to turn.</p>

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Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
				Vessels also carry deck cargoes, which is an added consideration for the Master in making safe passage and minimising rolling/pitching.
13-SN	Berwick Bank Wind Farm Scoping Opinion	February 2022	RYA Scotland	The RYA Scotland confirmed that the data sources described are sufficient, that the designed in measures are appropriate, the list of consultees is sufficient and cumulative effects of all offshore developments between the border with England and Duncansby Head should be considered as these would be encountered by vessels on passage from the south to the Caledonian Canal and the Northern Isles and vice versa (Hywind and Forthwind can be excluded).
14-SN	Berwick Bank Wind Farm Scoping Opinion	February 2022	NLB	Of particular interest is the 'funnelling' of vessel traffic between both existing and proposed offshore developments, and an assessment of these interactions, along with the increased allision and collision risk, is welcomed.
15-SN	Berwick Bank Wind Farm Scoping Opinion	February 2022	MCA	Vessel traffic surveys, 12 months of AIS data from 2019 and additional recreational data and consultation feedback is acceptable to the MCA. Consideration of electromagnetic deviation on ships' compasses should be included within the assessment. The MCA would be willing to accept a three-degree deviation for 95% of the cable route. For the remaining 5% of the cable route no more than five degrees will be attained. The array layout will require MCA approval prior to construction to minimise the risks to surface vessels, including rescue boats and SAR aircraft operating within the site. Any additional navigation safety and/or SAR requirements, as per MGN 654 annex 5, will be agreed at the approval stage.
16-SN	Berwick Bank Wind Farm Scoping Opinion	February 2022	UK Chamber of Shipping	Given the scale of the Proposed Development and its proximity to three consented offshore wind farms, there are concerns that a 10 nm study area is insufficient and suggest that these needs extended, especially to the west and the north to take in the other wind farm areas. The Proposed Development array area has the potential to amount to considerable navigational squeeze, between it and other developments as the gaps to Inch Cape and Seagreen are minimal. Traffic may route entirely west of the sites resulting in interaction with shallower waters, large amounts of fishing activity and the Forth Ports Vessel Traffic Service (VTS). Or traffic may route entirely east of the sites with greater deviation and further from SAR resources. Since the vessel traffic data presented is not representative of those sites at full build out, detailed examination and scenario modelling for traffic behaviour is required.
17-SN	Berwick Bank Wind Farm Scoping Opinion	February 2022	Ministry of Defence (MoD)	Defence maritime navigational interests should be considered, noting the Proposed Development overlaps two military danger areas and MoD Naval Practice and Exercise Areas (PEXAs) X5641 and X5642.

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Meeting Reference	Stage of EIA Process	Date	Attendees	Key Discussion Points
18-SN	Second Hazard Workshop	27 July 2022	Forth Ports, RYA Scotland, FMA, Scottish White Fish Producer Association	<p>Forth Ports - Offshore rig work is sporadic and could include periods of high activity which drops off for months at a time. Many of the rigs are towed into Dundee and then heavy lift vessels are used to transport them to the Firth of Forth.</p> <p>Given the proximity of the Proposed Development array area to the other three offshore wind farm developments in the region, there could be a crossroads formed for vessel traffic.</p> <p>The area is known to experience significant bad weather.</p> <p>RYA Scotland - The change in the Proposed Development array area boundary will make the gap between other wind farms less problematic and some recreational vessels may also cut across the eastern extent of Inch Cape leaving more space. The alignment of the western boundary of the Proposed Development array area and Seagreen is a positive change given that when passage planning it will be more obvious how vessels will transit through the area.</p> <p>FMA - Most of the larger tankers will navigate the inside route closer to shore and so the Marr Bank may prove to increase risk to these vessels, particularly in adverse weather.</p> <p>Scottish Whitefish Producer Association - The 1,260 metre (m) minimum spacing between wind turbines may be insufficient to allow safe navigation in any weather conditions. Fewer larger wind turbines are therefore preferable.</p>

4 RECORD OF DISCUSSIONS

This section of the Shipping and Navigation Road Map documents discussions, areas of agreement and outstanding points of discussion following each meeting as set out in section 3.

The following subsections record associated discussion:

- hazards expected to occur within and in proximity to the Proposed Development – section 4.1;
- key issues that require to be assessed in the EIA – section 4.1;
- data sources to be used to inform the baseline characterisation, including additional evidence requirements – section 4.1;
- method(s) of data analysis, future baseline and NRA methodology – section 4.2;
- sensitivity of the relevant receptors and evidence available on potential risk – section 4.2;
- approach to EIA, including the determination of level of risk – section 4.3;
- potential measures which could be applied to mitigate risk – section 4.3.

4.1 Hazards, Key Issues and Data Sources

This section aims to document and agree key areas of agreement and outstanding discussion points associated with the shipping and navigation baseline for the Proposed Development EIA. These include, but are not necessarily limited to the following:

- agreeing hazards expected to occur within and in proximity to the Proposed Development;
- agreeing key issues that require to be assessed in the EIA; and
- agreeing data sources to be used to inform the baseline characterisation, including additional evidence requirements.

Table 4.1 summarises the points of discussion, areas of agreement and outstanding agreements in relation to the shipping and navigation baseline for the Proposed Development.

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Table 4.1: Summary of Discussion and Agreed Position on Shipping and Navigation Baseline Data for EIA.

Topic/User	Summary of Data Available	Data Gaps	The Applicant Proposed Approach	MCA Advice/Position	NLB Advice/Position	Non-statutory Consultees Advice/Position	Summary of Final Position
Commercial vessels	AIS data, radar and visual observations, Anatec ShipRoutes database, UK port arrivals data.	None	As per MGN 654	As per MGN 654, confirmed content with approach to vessel traffic surveys.	No specific point raised, confirmed content with approach to vessel traffic surveys provided MCA are satisfied.	UK Chamber of Shipping – as per MGN 654 plus additional long term AIS data to consider COVID-19 pandemic and EU Exit effects.	Commercial vessel data is in line with MGN 654 and includes an additional 12 months of AIS data for validation.
Recreational vessels	AIS data, radar and visual observations, RYA Coastal Atlas of Recreational Boating (RYA, 2019).	None	As per MGN 654 and the <i>RYA Position on Offshore Renewable Energy Developments: Paper 1 (of 4) – Wind Energy</i> (RYA, 2019)	As per MGN 654, confirmed content with approach to vessel traffic surveys.	No specific point raised, confirmed content with approach to vessel traffic surveys provided MCA are satisfied.	RYA Scotland - as per MGN 654 and the <i>RYA Position on Offshore Renewable Energy Developments: Paper 1 (of 4) – Wind Energy</i> (RYA, 2019).	Recreational vessel data is in line with MGN 654 and includes use of the RYA Coastal Atlas of Recreational Boating.
Commercial fishing vessels in transit	AIS data, radar and visual observations, Vessel Monitoring System (VMS) data.	None	As per MGN 654	As per MGN 654, confirmed content with approach to vessel traffic surveys.	No specific point raised, confirmed content with approach to vessel traffic surveys provided MCA are satisfied.	Not Applicable (N/A)	Commercial fishing vessel in transit data is in line with MGN 654 and includes additional use of long-term VMS data.
Emergency responders	Marine Accident Investigation Branch (MAIB) marine accidents database, RNLi incident data, Department for Transport (DfT) UK civilian SAR helicopter taskings, historical UK offshore wind farm incident data.	None	As per data available	No specific point raised.	No specific point raised.	UK Chamber of Shipping requested additional 10 years of MAIB incident data be considered.	Latest 20 years of MAIB incident data has been considered alongside 10 years of RNLi incident data, six years of DfT SAR helicopter taskings data and historical UK offshore wind farm incident data.

4.1.1 Summary of Key Discussions

- Vessel traffic survey data collection should be as per MGN 654 (MGN 543 during the earlier stages of consultation) and collected within two years of submission.
- Additional long-term AIS data should be assessed to validate the vessel traffic survey data including consideration of any effects due to COVID-19 pandemic and EU Exit.
- MAIB incident data spanning the last 20 years should be considered to enhance safety and build as complete a picture as possible.

4.1.2 Summary Statement of Final Position

- Vessel traffic survey data collection has been collected as per MGN 654 and within two years of submission. Vessel traffic surveys dates are as follows with submission in November 2022:
 - 11 to 24 January 2021 (winter); and
 - 2 to 16 August 2022 (summer).
- The summer 2022 vessel traffic survey was completed since the vessel traffic survey previously undertaken between 17 and 31 July 2020 was outdated at the point of Application.
- An additional 12 months of AIS data (2019) has been assessed to validate the findings of the vessel traffic surveys and confirm any effects of COVID-19 pandemic and EU Exit.
- MAIB incident data has been considered over a 20-year period between 2000 and 2019 although the earlier 10-year period (2000 to 2009) has only been considered qualitatively given the changes to safety standards/regulations and poorer levels of reporting of incidents during that period.

4.2 Data Analyses, Sensitivity of Users and Evidence Available on Potential Effects

This section aims to document and agree key elements of the shipping and navigation data analysis for the Proposed Development EIA. These include the following:

- method(s) of data analysis, future baseline and NRA methodology; and
- sensitivity of the relevant users and evidence available on potential risk.

Table 4.2 summarises the points of discussion, areas of agreement and areas of outstanding discussion in relation to the shipping and navigation baseline data analysis for the Proposed Development.

Table 4.2: Summary of Discussion and Agreed Position on Shipping and Navigation Surveys and Data Analysis

Topic	The Applicant Proposed Approach	MCA Advice/Position	NLB Advice/Position	Non-statutory Consultees Advice/Position	Summary of Final Position
Vessel traffic surveys	As per MGN 654 (including Annex 1)	As per MGN 654 (including Annex 1).	No specific point raised.	N/A	As per MGN 654 (including Annex 1)
Future case vessel traffic	Two conservative and independent scenarios of potential growth in vessel movements of 10% and 20% throughout the lifetime of the Proposed Development and commercial main route deviations in line with MGN 654.	No specific growth indicated by MCA but assessed as per MGN 654.	No specific point raised.	Forth Ports – no terminal or berth changes are planned that may affect vessel traffic in the future with vessel numbers expected to remain reasonably consistent.	Two conservative and independent scenarios of potential growth in vessel movements of 10% and 20% throughout the lifetime of the Proposed Development and commercial main route deviations in line with MGN 654.

4.2.1 Summary of Key Discussions

- Vessel traffic surveys should follow the methodology outlined in MGN 654 and establish the baseline in line with MGN 654 Annex 1, including:
 - undertaken within two years of submission;
 - minimum of 28 days duration;

- account for seasonal variations and peak times; and
- sources in addition to AIS to ensure those vessels that are not required to carry and operate AIS are included.
- The NRA should include realistic values for future case volumes of vessel traffic.

4.2.2 Summary Statement of Final Position

- Vessel traffic survey data has been collected as per MGN 654 and within two years of submission. Vessel traffic surveys dates are as follows with submission in November 2022:
 - 11 to 24 January 2021 (winter, 14 full days); and
 - 2 to 16 August 2022 (summer, 14 full days).
- The summer 2022 vessel traffic survey was completed since the vessel traffic survey previously undertaken between 17 and 31 July 2020 was outdated at the point of Application.
- The NRA has included consideration of feedback from stakeholder in relation to future case volumes of vessel traffic.

4.3 Approach to EIA

This section aims to document and agree key topics associated with the maximum design scenarios assessed in relation to the shipping and navigation assessments for Proposed Development EIA. These include the following:

- maximum design scenarios;
- approach to assessment including assessment of risk; and
- potential measures that could be applied to the shipping and navigation assessment to mitigate risk.

Table 4.3 summarises the points of discussion, areas of agreement and areas of outstanding agreements in relation to the approach to offshore EIA for the Proposed Development.

Table 4.3: Summary of Discussion and Agreed Position on Shipping and Navigation Approach to EIA

Topic	The Applicant Proposed Approach	MCA Advice/Position	NLB Advice/Position	Non-statutory Consultees Advice/Position	Summary of Final Position
Risk assessment methodology	Methodology as per MGN 654 Annex 1.	As per MGN 654 Annex 1.	No specific point raised.	No specific point raised.	NRA has been undertaken using the Methodology contained within MGN 654 Annex 1. This includes use of the FSA within the NRA and the Shipping and Navigation Offshore EIA chapter (volume 3, 13.1 and volume 2, chapter 13 respectively).
Cumulative risk assessment screening	NRA to consider multiple scenarios based on development status, distance from the Proposed Development, level of interaction with baseline traffic relevant to the Proposed Development, level of concern raised during consultation and data confidence.	As per MGN 654.	Traffic patterns should be monitored throughout the development of the other offshore wind farms consented in the Outer Firth of Forth with any changes to the patterns noted.	UK Chamber of Shipping – given the scale of the Proposed Development and its proximity to three consented offshore wind farms, there are concerns that a 10 nm study area is insufficient.	NRA considers multiple scenarios based on development status, distance from the Proposed Development, level of interaction with baseline traffic relevant to the Proposed Development, level of concern raised during consultation and data confidence. Developments and routeing up to 50 nm from the Proposed Development array area are considered. The Navigation Safety Plan (NSP) will be undertaken post consent and include consideration of traffic patterns.
Maximum design scenario	Selection of the combination of parameters from the project design envelope which represent the greatest adverse significance for each hazard assessed.	Methodology as per MGN 654 Annex 1.	No specific point raised.	No specific point raised.	Maximum design scenario considered for each hazard within the risk assessment. The maximum design scenario was shared with stakeholders at the two Hazard Workshops.

4.3.1 Summary of Key Discussions

- The NRA – which informs volume 2, chapter 13 – should be undertaken using the methodology outlined in MGN 654 (including Annex 1), and in particular all hazards and therefore potential risks identified within the Berwick Bank Wind Farm Scoping Report (SSER, 2021a) for shipping and navigation should be considered in the NRA.
- The cumulative risk assessment should account for other offshore wind farm developments in the region and consider a sufficient extent.

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- As part of cumulative considerations, significant consultation was undertaken with all users in relation to the proximity to Inch Cape, with the establishment of a 'corridor'.
- The maximum design scenario for each hazard within the risk assessment should adhere to MGN 654 (including Annex 1).

4.3.2 Summary Statement of Final Position

- The NRA – which informs volume 2, chapter 13 – has been undertaken using the methodology outlined in MGN 654 including use of the IMO's FSA process. This methodology is standard within the industry and includes an iterative approach to risk assessment. This is reflected in the changes to the extent of the Proposed Development array area which were considered across two Hazard Workshops with stakeholders.
- MCA requires that as per MGN 654 all hazards and therefore potential risks identified within the Berwick Bank Wind Farm Scoping Report (SSER, 2021a) for shipping and navigation are considered in the NRA. These include:
 - vessel displacement;
 - vessel to vessel collision risk between third-party and project vessels;
 - increased vessel to vessel collision risk between third-party vessels;
 - vessel to structure collision risk;
 - reduced access to local ports;
 - reduction of under keel clearance;
 - interaction with subsea cables;
 - reduction of emergency response capability; and
 - interference with magnetic position fixing equipment.
- Other offshore wind farm developments have been suitably considered in the cumulative risk assessment, including a navigation corridor safety case for the gap between the Proposed Development array area and Inch Cape Offshore Wind Farm. The design of this 'corridor' has evolved through the NRA process based on feedback and concerns raised by stakeholders. The final corridor has a maximum length of 4.2 nm and minimum width of 4.1 nm and is compliant with MGN 654, PIANC and Maritime Institute Netherlands (MARIN) guidance.
- No objections to the maximum design scenarios have been received, with the main elements of the maximum design scenario including:
 - full build out of the Proposed Development array area;
 - buoyed construction/decommissioning area encompassing the maximum extent of the Proposed Development array area;
 - maximum number of surface piercing structures (307 wind turbines and ten OSPs/Offshore converter station platforms);
 - array layout consisting of full build out of the Proposed Development array area with at least two lines of orientation;
 - minimum spacing of 1,000 m between structures;

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- minimum burial depth of 0.5 m for all subsea cables;
- maximum cable protection height of 3 m and width of 20 m for all subsea cables (excluding crossings) with protection requirement for up to 15% of all subsea cables;
- up to 10,964 return trips by construction vessels throughout the construction phase and similar numbers expected for the decommissioning phase; and
- up to 2,323 return trips per year by operation and maintenance vessels throughout the operation and maintenance phase.
- All hazards (both for the Proposed Development in isolation and cumulatively) have been assessed to be not significant under EIA terminology.
- MCA, NLB and other interested parties are to review the NRA (volume 3, appendix 13.1) and volume 2, chapter 13.

5 CONCLUSIONS

The aim of the Shipping and Navigation Road Map is to compile meetings, discussions, areas of agreement and outstanding non-alignment that has been achieved in relation to the Shipping and Navigation topic for the offshore EIA and acts as a factual record of the information provided to MS-LOT and its statutory advisors at the point of Application with which to make a determination for Section 36 Consent and Marine Licences. This forms the basis of the EIA assessment presented within the Offshore EIA Report for the Proposed Development.

Further discussions post-Application will take place once volume 2, chapter 13 and volume 3, appendix 13.1 have been reviewed by the stakeholders to confirm their position and to establish a final agreement.

6 REFERENCES

- IALA (2021). *IALA Recommendation O-139 on The Marking of Man-Made Offshore Structures*. Edition 2. Saint Germain en Laye, France: IALA.
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- SSER (2020). *2020 Berwick Bank Wind Farm Offshore Scoping Report*.
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7 ANNEX A: MARINE TRAFFIC SURVEY SCOPE

A.1 Summary of Marine Traffic Survey Scope

In line with MGN 654 (MCA, 2021), it was necessary to undertake a vessel traffic survey within the Proposed Development array area and proximity. The vessel-based surveys involved a single dedicated vessel positioned centrally to provide optimal coverage of the Proposed Development array area.

A requirement of MGN 654 is for a minimum of 28 days of seasonally varied data which is usually collected during two, 14-day surveys, in summer and winter. MGN 654 also requires projects to have up-to-date traffic surveys of the area undertaken within 12 months prior to submission of the Environmental Statement, although this can be extended to a maximum of 24 months. It also states this should include all the vessel types found in the area and should take account of seasonal variations in traffic patterns and fishing operations.

Following stakeholder liaison with the MCA, Forth Ports and NLB in June 2020, additional stakeholder consultation with regards to small vessel activity, and analysis of 12 months of historical AIS data within the NRA was required, in order to mitigate for the potential impacts on COVID-19 pandemic restrictions on vessel activities during 2020.

A.2 References

Marine Guidance Note (MGN) 654 (2021). *Offshore Renewable Energy Installations - Guidance on UK Navigational Practice, Safety and Emergency Response (April 2021)*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/980898/MGN_654_-_FINAL.pdf. Accessed: June 2021.

