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TEESSIDE A & B

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1. Introduction

1.1. Approach

The construction of wind farms on Dogger Bank gives significant challenges in terms of HS&E risks. During the development phase Forewind's approach has been to look beyond regulatory compliance to achieve our objective of "Zero Harm". Forewind and the ultimate operators will continue this way of working into the next phase - protecting people and the environment from any harmful effects arising from further developing, building and operating Dogger Bank wind farms. This document sets out Forewind's approach.

Given the projected size of the development, its distance offshore and the prevalent environmental conditions, Forewind believes that the management of risks – including health, safety and environmental (HS&E) risks - must look beyond the normal adherence to prescriptive regulatory requirements. We have, therefore, developed systems and processes that aim to satisfy an overarching Safety Objective and Safety Principles.

The development of goal-based safety criteria is a fundamental requirement in the marine and offshore industries, which are moving away from prescriptive safety requirements towards a system of demonstrating that risk can be controlled by reference to:

- Safety arrangements and organisation
- Design safety analyses
- Compliance with standards and best practice
- Written schemes of investigation for each project area
- Examination, Maintenance, Inspection and Test (EMIT)
- Feedback
- Emergency arrangements

1.2. Safety Objective

The fundamental safety objective is to protect people and the environment from any harmful effects arising from installing, operating or decommissioning the Dogger Bank Wind farm without unduly limiting the operation of facilities or the conduct of activities that give rise to risks.

To bring this about, measures have to be taken:

- To prevent events that might harm people or the environment.
- To mitigate the consequences of any such events that might occur.

This objective applies to all parties involved in Dogger Bank development to all stages of the Project, including survey, planning, siting, design, manufacturing, construction, commissioning and operation as well as decommissioning.

A set of five applicable safety principles have been formulated, on the basis of which safety requirements are developed and safety measures implemented to achieve the fundamental safety objective.

2. Safety Principles

2.1. Principle 1 – Responsibility for Safety

Safety is a line responsibility and rest with the top management. A risk based safety management approach should be adapted. It will include:

- Verifying appropriate design and adequate quality of facilities, activities and associated equipment;
- Establishing and maintaining the necessary competences;
- Providing adequate training and information;
- Establishing procedures and arrangements to maintain safety under all conditions.

These responsibilities are to be fulfilled in accordance with applicable safety objectives and requirements as established or approved by the appropriate regulatory bodies, and ensured through the implementation of a suitable management system.

2.2. Principle 2 – Leadership and Management for Safety

Effective leadership and management for safety must be established and sustained for facilities and activities that give rise to risks.

The highest levels in an organization must demonstrate leadership in safety matters. Safety has to be achieved and maintained by means of an effective management system. This system has to integrate all elements of management so that safety requirements are established and applied coherently with other requirements, including those for human performance, quality and security, and so that other requirements or demands do not compromise safety. The management system also has to ensure the promotion of a safety culture, the regular assessment of safety performance and the application of lessons learned from experience.

This management system must integrate a safety culture that governs the attitudes and behaviour of all organizations and individuals concerned. A safety culture includes:

- Individual and collective commitment to safety on the part of leadership, management and personnel at all levels;
- Accountability for safety of organizations and of individuals at all levels;
- Measures to encourage questioning and learning and to discourage complacency.

A management system must recognise the entire range of individuals' interactions with technology and with organizations. To prevent human and organizational failures, we have to take human factors into account and support good performance and good practices.

Despite all measures taken, accidents may occur. The precursors to accidents have to be identified and analysed, and measures taken to prevent any recurrence. Operational feedback from facilities and activities — and, where relevant, from elsewhere — is a key means of enhancing safety to be encouraged.

2.3. Principle 3 – Justification of Facilities and Activities to ALARP (As Low As Reasonably Practicable)

Facilities and activities that give rise to significant risks must yield an overall benefit.

If facilities and activities are to be approved, their benefits must outweigh the risks to which they give rise. To assess benefit and risk, we have to take into account all significant consequences of the operation of facilities and the conduct of activities, together with their effect on others - from potential effects on safety of navigation to impact on the environment.

2.4. Principle 4 – Prevention of Accidents

All practical efforts must be made to prevent and mitigate accidents.

To ensure the least harmful consequences possible of an accident, measures have to be taken to prevent:

- Failures or abnormal conditions (including breaches of security) that could lead to accidents;
- The escalation of any such failures or abnormal conditions.

The primary means of preventing and mitigating the consequences of accidents is implementation of double or multiple barriers. These stacked barriers would have to collectively fail before harmful effects could be caused to people or to the environment. If one level of protection or barrier were to fail, the subsequent level or barrier would be available. When properly implemented, multiple barriers ensure that no single technical, human or organizational failure could lead to harmful effects, and that the combinations of failures giving rise to significant harmful effects are highly improbable.

Effective mitigation is provided by an appropriate combination of:

- An effective management system with a strong management commitment to a strong safety culture
- Adequate site selection and the incorporation of good design and engineering features providing safety margins, diversity and redundancy, mainly via:
  - Design, technology and materials of high quality and reliability;
  - Control, limiting and protection systems and surveillance features;
  - An appropriate combination of inherent and engineered safety features.

The risks arising from the construction and operation of the Dogger Bank wind farm are considered to be tolerable and *as low as reasonably practicable* (ALARP).

2.5. Principle 5 – Emergency Preparedness and Response

Arrangements must be made for emergency preparedness and response for foreseeable incidents.

The primary goals here are that:

- Arrangements are in place for an effective response at the scene and, as appropriate, at local, regional, national and international levels;
- For reasonably foreseeable incidents, risks would be ALARP;
- For any incidents that do occur, practical measures mitigate any human and

environmental consequences.

The operator has to establish, in advance, arrangements for preparedness and response for an emergency at the scene. These must involve all appropriate levels of management and, where appropriate, be in concert with regulatory and government authorities.

Arrangements have to reflect:

- The likelihood and the possible consequences of an emergency;
- The nature and location of the facilities and activities.

In developing the emergency response arrangements, all reasonably foreseeable events must be considered. Emergency plans have to be exercised periodically to ensure the preparedness of organizations with responsibilities for emergency response.

3. Principle 1 – Responsibility for Safety

Forewind is a consortium comprising four leading international energy companies: - SSE, RWE, Statkraft and Statoil. We joined forces to bid for the Dogger Bank Zone Development Agreement as part of The Crown Estate's third licence round for UK offshore wind farms (Round 3).

Forewind and the ultimate operators are committed to zero-harm and to leading the industry in health and safety. We believe that an excellent health and safety performance is necessary for commercial success.

To deliver this we will:

- Work systematically to understand and adequately control risks;
- Take responsibility for safety and security;
- Stop unsafe acts and operations;
- Provide a safe and attractive place to work characterised by respect, cooperation and well-being;
- Enthusiastically demonstrate the importance of health and safety – our highest priority in the way we work;
- Ensure and continuously improve the necessary quality in our facilities, equipment and processes;
- Consult with employees on matters affecting their health and safety;
- Provide our staff with the resources, equipment, information, instruction, training and supervision to carry out their work in a safe and healthy manner;
- Select our contractors based on qualifications and merit as well as cost;
- Cooperate with our contractors and suppliers on a basis of mutual respect and trust;
- Be prepared for emergency situations and do our utmost to save lives, prevent injury and avoid harm to the environment.

4. Principle 2 – Leadership and Management for Safety

4.1. Strong and Visible HS&E Leadership

Good HS&E leadership is vital to any projects but even more so, on a complex offshore wind farm of this magnitude. It has to come from the very top and be reflected in all organisational areas and levels of management.

Failure to provide strong and visible leadership will result in a fragmented and ambiguous approach to safety, which will lead to confusion and disorganisation and contribute to the likelihood of serious incidents.

Our policy is that managers are to lead and be involved in such a way as to conduct activities without harm to people and the environment, and to make it possible to achieve our HS&E goals. Managers are to be visible and demonstrate good HS&E behaviour to promote a healthy, safe and environmentally friendly workplace. They must also take the lead on continuous improvement and on establishing best practice.

Requirements for management are that:

- HS&E activities and processes are integrated in business activities, and documented;
- Employees and suppliers are familiar with relevant HS&E requirements, and monitoring is carried out to ensure that they are known and observed;
- HS&E goals are established, measures prioritised, responsibilities clarified, and the necessary resources made available;
- HS&E goals and results are communicated actively, honestly and openly, both internally and externally;
- An HS&E plan is established for all business activities, and kept updated;
- HS&E is a regular topic at all management and entity meetings.

4.2. Managing Impact of Cost Reduction

4.2.1. Negative Impact

All industries recognise the pressures from the intended (and frequently unintended) consequences of cost reduction on risk control. They are specifically applicable to the offshore wind industry, which seeks to drive down costs in order to be competitive. The Crown Estate (TCE) has recognised this issue and has initiated studies into the potential impacts of cost reduction exercises. The results of these studies have provided some useful indicators for measures that can have either a negative or often a positive impact on risk management. Among those that can have a negative impact are:

- The move to larger turbines
- Increased weather windows for operations
- Lack of validation of support structures
- Relaxation of design standards
- Increased competition (positive impact in addition)
- Use of helicopters (positive impact in addition)
- High growth – revolution versus evolution
- Lack of offshore or onshore test facilities/sites.

Larger Turbines

Unless technology providers get it right first time (e.g. next generation 6 - 7MW turbines) HS&E issues can result in respect of technology, hardware and operation. This can be particularly relevant when there are no precedents within / outside the wind industry.

Requirements for larger turbines can result in equipment limitations and component handling constraints. The risk of installation equipment being used too close to operational limits can result. Such limitations can also limit the technological gains from larger turbines.

Weather Windows

The aspiration to increase the operational weather window brings challenges of access methodologies, vessel endurance and robustness, and operational limits to emergency response.

Validation of Structure

Lack of validation of support structures by demonstrating design compliance could lead to a “safe place of work” being compromised by structural inadequacy.

Design Standards

Modifying or adapting current design standards to be more appropriate for offshore wind farms by making structures lighter and more efficient could lead to unknown long-term performance issues and also compromise a ‘safe place of work’.

Increased Competition

Increased competition will attract inexperienced companies and operatives. Whilst companies may be generally technically competent, long-term experience in offshore wind will not exist. The right solutions are sometimes derived from long-term learning. The negative impact is inadequate consideration of HS&E in technology designs, insufficient appraisal / training of new entrant companies and consequently vulnerable operatives.

Helicopters

Increased distances offshore and therefore increased use of helicopters for transport of personnel brings risks associated with this form of transport.

High Growth

High industry growth rates can lead to a reduction in experience transfer from project to project and continued re-learning - and repeated mistakes.

Lack of Test Facilities

A lack of test locations/sites may lead to deployment of technology and equipment before it is fully tested/validated. While probably unlikely in the case of turbines, it is important to understand how new vessels and construction methodologies are tested before use offshore.

4.2.2. Positive Impacts

Conversely, some pressures can have a positive impact on risk. For example:

- Application of hierarchical design mitigation strategies (such as those contained in the Construction (Design & Management) Regulations 2007 Designers Guide)
- Intrinsic safety introduced
- Reduction in exposure hours for a particular element of work
- Reducing frequency of offshore trips and / or offshore transfers
- Reducing frequency of any exposure to potentially hazardous activity
- Reducing quantity of interfaces requiring positive management
- Improving methodology to reduce number of operations
- Improving methodology to reduce or eliminate man / machine interfaces
- Increased prefabrication / maximising onshore activity (compared to equivalent offshore activities)
- Maximising remote operation offshore
- Reduced use of, or dependency upon, emergency services.
- Integrated welfare arrangements
- Improved ergonomics
- Reducing dependency on training and experience – simplifying the activity or process
- Simplifying construction and decommissioning activity
- Harmonisation of standards and equipment
- Improved contract terms or vessel charter conditions that do not force accelerated working in the event of a schedule over-run
- Timely implementation of robust health and safety assurance provisions within financing framework
- Insurance provisions requiring health and safety assurance provisions within premiums.

It is key to ensure that additional resources are applied to any negative impacts of cost reduction until they become neutral or positive.

In practical terms Forewind, developers and ultimate operators will use a comprehensive risk-based approach when considering cost alternatives. We will actively seek neutral or positive HS&E outcomes from each decision, or invest to mitigate potentially negative outcomes.

4.3. Embracing Industry Lead

The Dogger Bank Development Project aims to be at the forefront of safety management in the offshore renewables industry. Therefore, Forewind will initiate annual lessons-learned workshops with owners' HS&E representatives, and participate in HS&E lessons learnt within the industry: through Renewable UK initiatives, The Crown Estate initiatives and relevant in-house events with each owner.

Forewind is committed to the target of Industry Leadership in HS&E, specifically in supporting business development, ensuring zero harm, Ensuring sustainable growth and Safeguarding the Forewind reputation.

We will achieve this by following these principles and actions: pursuing zero harm, understanding and managing risk, continuously involving management, progressively increasing HS&E competence, assuring compliance, capitalising on existing experiences and tools, individual accountability, learning from incidents, focusing on leadership and behaviour, and making sure there are no rewards for successful shortcuts.

We will have succeeded: when recognised for our values, within and beyond our organisation; when Forewind is a preferred partner in business development projects on the basis of our HS&E track record; when we systematically seek and share experiences; when we perform better than other benchmarked companies; and when other companies, NGOs and authorities

refer to Forewind for HS&E guidance.

Industry leader in HS&E – pursuing zero harm
Our goal of zero harm has to become a part of how we think and work. This zero mind-set implies that:

- Zero is a way of thinking
- Zero is a driving force for continuous improvement
- We accept precautionary principles in the way we do our work
- We invest in contentment and a good working environment
- Solutions are at the source instead of protective measures, repairs and cleaning up from emissions and discharges
- We are planning properly, observing, continually assessing, and using the time required to work safely and in new ways.
- We design our new plants for a high HS&E level during operation.
- We do not accept breaches of security or non-ethical conduct.

4.4. Identify and Mitigate all Key Risks

Forewind considers risk management a continuous process and the cornerstone of HS&E management. HS&E risk comprises the possible harmful effects of both unintentional incidents and planned operations. As part of the decision-making process, we must identify and assess relevant HS&E risk factors, and implement relevant control measures.

HS&E risk management is based on ISO 31000 *Risk management - Principles and Guidelines* and ISO 17776 *Guidelines on tools and techniques for hazard identification and risk assessment*.

To that end, our process establishes that:

- HS&E risk must be identified and documented for all activities;
- The project will carry out systematic risk workshops and aggregate identified risks in the line;
- Senior Management Team will carry out regular risk workshops and maintain a project risk matrix;
- Risk tolerance criteria will be established and documented at relevant levels. The format must be adapted to the use and decisions to be taken. The criteria must specify minimum requirements based on authority and Forewind minimum requirements, and the HS&E level in relevant similar industries and facilities;
- Risk-reducing measures will be implemented in order to meet the criteria and to reduce the risk of harm to *as low as reasonably practicable* (ALARP);
- Impact Assessments will be performed for all relevant projects to assess environmental, social and health impacts, and to define measures to reduce or avoid negative impacts and enhance benefits;
- Quantitative and qualitative risk analyses will be used to obtain a balanced picture of probability and consequences of incidents. They will be used to identify and assess functions and defects critical to health, safety and the environment, and as a basis for design and improvements;
- The performance and status of measures to reduce HS&E risk will be established and followed up.

Forewind applies the principle of risk reduction to *as low as reasonably practicable* (ALARP). Our Principles and Requirements define this as reducing the level of risk– through a documented and systematic evaluation process – to *as low as reasonably practicable*, i.e. a level at which it is not possible to identify any cost-efficient measures that would further reduce the risk.

We have implemented robust management procedures for identifying and mitigating such risks in all areas of the project. These procedures will be communicated and shared with future developers and operators of the Dogger Bank projects.

4.5. Management of Change

Failure to manage the results – both intended and un-intended – of changes to any aspect of the project, such as organisation and responsibility, design, operational and maintenance activities, can increase the likelihood of an undesired event. We therefore recognise the fundamental importance of management of change in project management and all parts of the development process.

Changes are to be managed so that they do not entail an unacceptable risk. Assessments of such risks and mitigating measures are to be documented. The following key points are highlighted when changes are proposed:

- Temporary or permanent technical, operational or organisational changes must be dealt with systematically and assessed with regard to the HS&E impact, and relevant risk-reducing measures implemented.
- Dispensations from requirements must be dealt with formally and recorded in a central overview.
- Temporary changes must not be continued without formal assessment.
- Changes in external and internal requirements, technical standards or new knowledge about HS&E effects must be identified systematically, and relevant measures implemented.
- Employees and suppliers must be informed about changes and any training required as a result of such changes.

4.6. Identification and Consultation with All Key Stakeholders

Method of Consultation

Identifying key stakeholders and the potential challenges and associated risks that they may face throughout the project's phases is a key aspect of understanding the impact of this project.

Before the Planning Inspectorate (PINS) will accept a Development Consent Order ('DCO') application, they must be satisfied that the applicant has fully complied with the requirements of the Planning Act 2008 ('the Planning Act'). This includes consultation with a number of key stakeholders, who include:

- Those directly affected by the scheme, including statutory bodies, the relevant Local Authorities, landowners and others with an interest in the land or who may be affected by the construction and operation of a consented scheme (Section 42 of the Planning Act);
- The Local Community (Section 47 of the Planning Act); and
- The General Public (Section 48 of the Planning Act).

Detailed within the Stakeholder Engagement Plan ('StEP'), Forewind's stakeholder management strategy establishes that we will:

- Identify and pro-actively engage with those statutory bodies, non-governmental organisations, other national and international organisations, the local community and

landowners potentially affected by our activities;
- Develop a transparent consultation and engagement strategy to fulfil the pre-application consultation requirements of the Planning Act;
- Prioritise consultation with stakeholders who are directly affected or who have a greater cause for concern as a result of our development proposals;
- Be open and honest in all communications with all stakeholders; and
- Recognise the interests and points of view of all stakeholders and wherever appropriate to use these to inform our development activities.

Following this, Forewind produced a Statement of Community Consultation ('SOCC'), which identified:

- Who we have consulted and will consult with;
- When that consultation will take place;
- What will be consulted on; and
- What we will do with the responses.

Forewind has also held a number of public and stakeholder consultation events, which has helped to refine the scope of the consultation process. We have encouraged mariners and members of the fishing community to engage with us as part of this process. More information is detailed in the Fisheries Liaison Plan ('FLP').

Forewind is also aware that there are other organisations that have an interest in the Dogger Bank Projects. These organisations include various wildlife and conservation organisations, such as the Royal Society for the Protection of Birds ('RSPB'), private companies and international stakeholders. Throughout the development process, we have sought to consult these organisations as identified in both the StEP and SOCC.

Transboundary Consultees

Forewind recognises that the development of the Dogger Bank projects has the potential to cause trans-boundary effects in areas such as commercial fishing, international shipping and international conservation.

The United Nations Economic Commission for Europe ('UNECE') Convention on Environmental Impact Assessment ('EIA') in a Transboundary Context ('the Espoo Convention') was negotiated to promote environmentally sound and sustainable development, whilst also enhancing international co-operation in assessing the environmental impacts of a development, especially in a transboundary context such as inter alia shipping, marine mammals, fisheries and emergency response.

The Espoo Convention requires that assessments are extended across national borders when a planned activity in one country may cause significant effects in another. Forewind has therefore consulted with a number of key consultees over transboundary issues.

We are therefore confident that we have identified all key HS&E and Emergency Response stakeholders and that we have developed appropriate mitigation for all actual and perceived risks arising from implementing the Dogger Bank projects.

On-going Consultations

Forewind recognises that consultation is a lifecycle process and as such we will continue close liaison with all consultees during design, constriction, operations and decommissioning stages of the project.

4.7. Safety Management Systems

Forewind recognises that inadequate systems for the management of health, safety and environmental risks will probably result in an undesired event. The failure to apply the appropriate controls and risk mitigation at the design and construction planning stages of a project will lead to inherent risks, present perhaps throughout the life of the development.

Our HS&E management system is an integral part of the Forewind total management system. The following key parts of our Safety Management Systems comply with appropriate guidance.

1. Policy
2. Organising
3. Planning
4. Measuring performance
5. Auditing and reviewing performance

The company's governing HS&E documentation together with relevant statutory requirements form the basis of our HS&E management systems. The responsibility for performance and compliance rests with the line management, supported by the HS&E personnel.

The scope of our activities comes under the UK Construction, Design and Management Regulations 2007 (CDM). These introduce the duties of Client and Designer. Forewind will ensure that duties and responsibilities are clearly communicated, in place and operational as intended for all involved and at all stages of a project development.

The Forewind Health and Safety Management System (HSMS) and associated documents demonstrate that we have made appropriate arrangements to control all HS&E-critical activities during business development.

4.8. Contractor Selections, Competence and Resources

Forewind is looking to adopt the NORSOK Standard S-006: *HS&E Evaluation of Contractors* procedure as to ensure a standardised methodology for evaluating and following up on the HS&E management systems used by contractors. All Forewind participant companies would therefore be required to sign up/agree to its use or cite an equivalent system. Any such system would have to embrace the requirements of UK CDM ACoP Appendix 4

Duty holders on the project must satisfy themselves that organisations that they wish to appoint are competent. That is:

- Sufficient knowledge of the specific tasks to be undertaken and the risks that the work will entail;
- Sufficient experience and ability to carry out their duties in relation to the project; to recognise their limitations and take appropriate action in order to prevent harm to those carrying out construction work;
- The capacity and will to learn progressively and share.

Clear and concise assessments must be carried out, maintained and recorded for all contractors and HS&E critical staff / consultants with the potential to carry out works.

4.9. Prioritise Health, Welfare, Safety / Environment Issues

Forewind will prioritise health, welfare, safety and environment issues and provide appropriate resources, funding and management time to assessing and mitigating any arising risks. Forewind HSE undertaking states that we strive to have no work-related illnesses and injuries and that we will pursue a working environment that provides a basis for a healthy and meaningful working situation. Our health and working environment principles state that:

- We will strive to reduce the health risk from our activities and products to *as low as reasonably practicable* (ALARP);
- We will identify, assess, control and review all relevant health risks;
- We will undertake Health Impact Assessment for all project-wide Forewind operations;
- We will set specific requirements, targets and improvement measures based on relevant knowledge and results from risk management;
- We will use Human Factors principles in designing and modifying work places and work processes;
- We will respect individual employees, develop and inspire them, and promote an improved working environment and a health-promoting workplace;
- We will ensure that the people in our operations fulfil relevant health requirements;
- We will monitor health and working environment status, and report and investigate incidents;
- We will assess and secure adequate local health facilities and Medical Emergency Response.

4.10. Appreciating Lessons Learnt from Oil & Gas Operators in the area

One of the primary issues associated with offshore renewable energy is the need to operate in a uniquely challenging environment. The huge potential that offshore wind offers the UK is both an opportunity and a challenge, because the areas of the greatest potential are the areas where it is most difficult to exploit that resource. The offshore marine environment is rightly considered one of the most challenging working environments on the planet.

The oil and gas industry is well established within the North Sea and has therefore amassed considerable experience within the offshore marine environment. With projects such as Dogger Bank now being developed at much greater distances offshore than previously, the industry's experience in building the existing projects relevancies increasingly less relevant, while the lessons learnt by the oil and gas industry are becoming much more pertinent. Forewind is naturally keen to ensure that these lessons can inform the Dogger Bank project. We have initiated lessons learned workshops with HS&E representatives from our owners (RWE npower Renewables, Scottish and Southern Energy, Statkraft and Statoil) and participated in HS&E lessons learned sharing exercises within the industry, including RenewableUK initiatives and those led by The Crown Estate.

Forewind will also consider incorporating aspects of other plans, such as the integrated search and rescue ('SAR') provisions of BP Jigsaw. The required Dogger Bank SAR provision will depend upon the extent of offshore development at any given time. The Jigsaw concept employs a regional approach to rescue and recovery offshore. It has evolved from current methods based primarily on standby vessel provision alone. As part of our commitment to safety, we will build upon such initiatives, while lessons continue to be learnt from oil and gas operators in the area, to ensure that best practice can be followed and that all activities undertaken are informed by experience.

4.11. Clear Legal Jurisdiction and Framework

Failure to appreciate and define the legal framework under which the project will operate throughout its lifecycle – particularly for those activities conducted offshore - can result in confusion and inappropriate management of risks. Ignoring the relevant regulations can result in sub-standard vessels, contractors or processes being employed, leading to an increased risk of an undesired event.

The offshore site area, the cable corridors and all onshore activity will fall under the UK Health and Safety at Work etc (HSAW) Act 1974 –Application Outside Great Britain (AOGB) Order 2013. This applies UK H&S legislation to all phases of construction / operation/ maintenance and decommissioning.

Key elements of the UK Regulations therefore applied to the projects are the Management of Health and Safety at Work (MHSW) Regulations1999, applicable throughout the project, and the Construction Design and Management (CDM) Regulations 2007, which apply to the design, planning and management of the development as well as certain maintenance activities (CDM Reg 2), and to re-powering and decommissioning.

Application of UK Merchant Shipping Act and subsidiary Regulations will apply to UK vessels and, in specific circumstances, to foreign flagged vessels.

It is a key requirement that all concerned in the project, future developers and operators and, especially, sub-contractors are aware that such legislation applies. They must also be aware of the implications for their activities, including the need to incorporate these regulatory requirements where applicable into their own safety management systems and procedures.

5. Principle 3 – Justification to Facilities and Activities to ALARP

5.1. Design Standards – Withstanding Extreme Events

The design of the various elements of the development will meet design standards appropriate to the operating conditions and the environment. For example:

- EN16400-1:2005 *Wind Turbine Design Requirements*
- EN 50308:2004 (*Wind Turbines – Requirements for Design, Operation and Maintenance*)

Design - Weathering the Extremes
The structures must demonstrate a 'design withstand capability' appropriate to the area of operations. This will entail demonstrating how the structures will operate and survive specified events appropriate to the area and the expected lifetime of the development. Such events will include:

- Extreme storms and waves
- Earthquakes/tsunamis
- Lightning.

5.2. Maintaining Design Integrity

Ensuring that plant, equipment and activities continue to be operated within their designed parameters, changes to equipment or operational activity must be properly managed. Such equipment must be examined, maintained, inspected and tested to ensure that it remains within design specification.

Change Management

All changes, whether to design or activities are managed so that they do not entail an unacceptable risk and that they maintain the design integrity of plant and equipment.

Assessments of risks arising from such changes and measures taken to mitigate such risks are to be documented. Examples of changes to be subject to change-assessment include:

- Temporary or permanent technical, operational or organisational changes
- Dispensations from requirements
- Changes in external and internal requirements, technical standards or new knowledge about HS&E effects (which must be identified systematically, and relevant measures implemented).

Employees and suppliers must be informed about these changes and any training required.

Forewind requires that any significant design decision or change that limits the scope of the project shall be made and logged according to this process. Decisions will commonly be formalised as part of consent envelopes, lease agreements, grid connection agreements, contract scopes and survey or study scopes – all of which limit future options. For example, decisions could cover onshore or offshore aspects of:

- Boundaries or routes
- Layouts
- Technologies

- Dimensions, and physical or technical characteristics of components
- Methodologies for logistics, installation, operation & maintenance, or decommissioning
- Mitigations, limitations, and time constraints
- Grid and construction programmes.

Examination, Maintenance Inspection and Test (EMIT)

Failure to carry out maintenance in accordance with the turbine manufacturer's guidelines can result in undiagnosed faults and failures leading to the turbine operating outside of its designed conditions and tolerances. This may then present a hazard to those attempting to access it (e.g. for maintenance) or, in the worst case, result in a catastrophic failure, which may impact on people or the environment. Design integrity must be maintained so that the turbine's performance and safety are not compromised by additions, alterations and substitutions of components throughout its life.

All plant, equipment, installations and offices will be subject to appropriate schemes of Examination, Maintenance, Inspection and Test so that their design integrity is maintained and goals for safe and efficient operation are met.

This will require that:

- The design integrity of plant and equipment must be maintained in all operational situations
- The integrity of facilities, security and emergency response must be established and maintained in all operational situations
- Critical systems, critical safety equipment and safety barriers must be systematically tested, inspected and maintained.
- Barriers and safety functions must be defined with performance requirements and measurement parameters, and their function, condition and availability must be understood. In the event of failure, compensatory measures must be implemented.

To ensure this, the ultimate operator will establish a Maintenance Management System (MMS) for the in accordance with the various manufacturers' maintenance schemes or as otherwise determined by a competent person.

5.3. Maintaining navigation Safety

The Navigational Safety Risk Assessment (Anatec Navigational Risk Assessment – Dogger Bank Teesside A and B, dated 11th Oct 2013) conducted for the Dogger Bank development examined the hazards presented by both the individual developments (Teesside A and B) and its entirety. The hazards were identified and recorded in the Hazard Log for the development.

Throughout the formal safety assessment, developments within the Dogger Bank Zone (Dogger Bank Creyke Beck A & B and Dogger Bank Teesside A & B) have been considered cumulatively from a navigational safety perspective. This has included a review of the main navigational hazards presented by the cumulative scenario with relevant stakeholders and statutory bodies throughout a hazard workshop as well as calculating anticipated deviations of main shipping routes in the Dogger Bank Zone.

It determined that the principle hazards presented were:

- To vessels under power proceeding en route in the North Sea;
- To vessels that had lost propulsion/directional control ('Not Under Command' (NUC)) and drifting in the vicinity of the wind farm;
- Fishing vessel collision/entanglement with the structures/cables;
- An increase in vessel encounters as a result of re-routing around the development, resulting in more vessel-to-vessel collisions;

- The ability of UK SAR assets to conduct SAR activities within the development.

Allision

The same Navigational Safety Risk Assessment concluded that the return period for allision (collision between passing vessels under power and the structures) was one in every 636 years. It further determined that, for vessels Not Under Command (NUC) resulting from loss of propulsion or directional control, the calculated return period is one in every 8,934 years.

Collision - Major Loss of Life / Pollution

The Navigational Safety Risk Assessment concluded that, as a result of the development, the return period for collisions between vessels with the potential to cause major loss of life or a pollution event in the area is one in every 242 years.

5.4. Adequate Charting, Lighting & Marking of Assets

In order to ensure that the risks arising from the above hazards are adequately mitigated to an ALARP level, Forewind will implement appropriate risk controls as agreed with the relevant authorities. These will include but not be limited to:

- Charting structures and sub-sea cables;
- The installation of Aids to Navigation (AtN), including lighting, electronic aids (such as RACONs/ AIS) and fog signals in accordance with IALA Recommendation O-139;
- Implementing any routing measures.

Charting

Appropriate information will be provided to the UK Hydrographic Office (UKHO) in order that positional information and physical characteristics of surface and sub-surface structures (including cables) can be charted and otherwise promulgated in marine publications. This will ensure that mariners will have appropriate information on the hazards presented by the development.

Such information will also be provided to Kingfisher Information Services – Offshore Renewables Cable Awareness (KIS-ORCA) for the benefit of fishermen.

Lighting and marking

Lighting and marking of the developments must meet the requirements of the General Lighthouse Authority (GLA).In this case, it is Trinity House Lighthouse Services (THLS). They in turn apply the recommendations of the International Association of Lighthouse Authorities (IALA) contained in the IALA Recommendation O-139 - *The Marking of Man-Made Offshore Structures* Edition1. They also apply the recommendations contained in DECC guidance on the marking of offshore structures contained in the Standard Marking Schedule for Offshore Installations.

These guidance documents make recommendations for (among other things):

- The numbers, types and characteristics of lights installed as Aids to Navigation (AtN) applicable to the development (including those on structures other than wind turbine towers);
- The requirements for secondary lighting in case of failure;
- The use of electronic AtNs such as Racons and AIS;
- Colour and extent of high visibility paint used on the structures;
- The number and ranges of foghorns;
- The availability criteria for such AtN;
- Unique identifiers and lighting for structures and lighting.

The developers will, therefore, seek agreement with THLS on appropriate lighting and marking at all stages of the project.

Provision of Information to Mariners

Key to ensuring the safety of mariners is the provision of appropriate information to the marine community through the appropriate channels by such means as:

- Issuing of notices to mariners (by Forewind) detailing activities that may present a temporary hazard to shipping (particularly for construction and maintenance activities);
- Provision of positional information regarding the structures and cables to the UKHO for chart corrections (through temporary and permanent Notices to Mariners (NMs));
- Provision of hydrographic information (bathymetric) information to the UKHO for charting purposes;
- Provision of information to the UKHO for the promulgation of Maritime Safety Information (Notices to Mariners (NMs), Navtex, radio navigational warnings (WZs) etc.);
- Promulgation of information to the fishing industry by Kingfisher (KIA-ORCA;
- Provision of cable routes and details to SubSea Cables UK.

Providing Orientation within Wind Farm

In order to assist small craft, SAR vessels and helicopters that may enter the array area, the individual WTGs and structures will be provided with unique identifiers. These alpha-numeric identifiers will provide locational references to vessels within the array.

Hydrographic Data

Hydrographic information obtained for the development or any arising changes in depths etc., such as rock armouring/berms used to protect cables) will be notified to the UKHO. Cable protection measures that present a significant risk to navigation must be addressed in the Navigational Safety Risk Assessment or addressed separately, if this is not possible due to lack of finalisation of the design.

Radar

The Navigational Safety Risk Assessment recognised the potential of the wind farm to interfere with vessels' radar and, hence, to present a hazard to navigation. There are no proactive measures available to the developer to further mitigate this risk beyond the awareness of this problem and the guidance to vessels promulgated by the MCA in MGN 372 (*Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs*). However, the risks of masking and confusion (especially of small vessels emerging from the wind farm) are considered tolerable.

Anchor Snagging

The assessment also identified a risk resulting from vessels potentially snagging anchor cables or fishing gear. We consider the risk can be mitigated to a tolerable level by:

- Charting of the cable
- Provision of cable positional data to KIS-ORCA
- Cable burial and/or protection in line with cable Burial Protection Index
- Ensuring that protection methods do not decrease navigational safety (for example by reducing water depth)
- Implementing an inspection and maintenance regime to ensure that cables do not become exposed.

Fishing Areas

The Dogger Bank has, traditionally, been a very active fishing ground. The wind farm will present a significant hazard to fishing vessels fishing close by and on cable routes. While cable burial to an appropriate depth and inspection addresses some issues, the issue of fishing vessels continuing to fish close to turbine towers and other offshore structures remains.

Forewind does not foresee the need to apply for restrictions on fishing activity within the wind farm areas post construction. Restrictions will be limited to the construction phase. To avoid and reduce impacts is considered the most sustainable approach to coexistence. However, in some cases, mitigation, including methods of mitigating disruption, will be the most appropriate measure. A successful mitigation strategy will require open and continuous communication between Forewind and the fishing industry. Mitigation will be addressed appropriately when needed and on a case-by-case basis.

In order to continue the on-going fisheries liaison and consultation process, a fisheries working group was discussed with the fishing industry representatives and subsequently received positive feedback as a suitable method of continuing on going communication. The proposed fisheries working group would comprise two meetings a year attended by representatives from each international or regional fishing group, continuing post consent through the pre-construction phase, construction phase and potentially once operational. The working groups would be a forum to discuss project updates, planned survey, construction or maintenance activities and any potential queries that come up.

5.5. Aviation

Use of Helicopters

Forewind emphasises that the first option discriminates against the use of helicopters for operations or during day-to-day operations and seeks to restrict activity to emergency response purposes only.

However, this will be evaluated after individual and collective project development plans are established. Use will be based on holistic operational risk assessment of the hazards and comparison of helicopter use with that of vessels. A decision will be made according to the perceived risk.

Helicopter Safety

Over the last 30 years, UKCS offshore helicopter operations have progressively achieved a reasonable safety record. The same is true over the past 15 years when compared with similar oil and gas operations globally, and with most forms of UK land-based passenger transport.

CAA data on notifiable accidents and, in particular, UK Oil and Gas Industry Association Ltd data contained in their report *UK Offshore Commercial Air Transport – Helicopter Safety Record* (which focuses on helicopter operations in support of activities in the UKCS), indicates that safety improvements have progressively achieved a reasonable safety record, comparable with other forms of commonly used land-based passenger transport.

Transport Mode	1995 – 2009 Average
Air (UK Airline operations)	0.003
Rail	0.27
Car	2.57
Two Wheeled Motor Cycles	106.67
Pedal Cycle	34.6
Pedestrian	43.27
Offshore Helicopter	13.8

Table 1 Comparison of Average Passenger Fatality Rates per Billion Passenger Kilometres by Transport Mode 1995 to 2009

Given the potential levels of passenger traffic and the issues concerning current workboats, distance offshore/transit times and prevailing conditions, helicopter operations appear an appropriate mode of transport in the circumstances.

Forewind has, therefore, taken into account:

- The risks involved in the use of helicopters for the intended role and comparison with other means e.g. offshore vessels, workboats, daughter craft etc.;
- The risks involved in introducing new activities (i.e. helo transfers to nacelles) to the routine activities currently conducted by helicopter operators;
- The issues involved in designing, maintaining and manning helidecks (e.g. on sub-station platforms/offshore hubs/NUIs) in accordance with the appropriate standards (CAA document CAP 437 and HSE Offshore Helideck Design Guidelines);
- Training of personnel to operate helidecks/NUIs. (UKOOA *Guidelines for Management of Offshore Helideck Operations*).

When choosing a company to undertake such support activities, we will consider:

- Their experience and record;
- Certification (i.e. Air Operators Certificates (AOCs));
- Compliance with codes of practice such as International Business Aviation Council's – International Standard for Business Aircraft Operations (IS –BAO);
- The results of inspections and audits undertaken by the company, the CAA and other bodies with regard to helicopter activities;
- The geographical location of the site and the availability of air safety services such as air traffic control or Wide Area Mutilateration (WAM).

Helicopter Facilities - Design Standards and guidelines

Helicopter facilities may be provided on specific structures (e.g. the substation structures). Where considered necessary, they will conform to the appropriate guidance and standards for design and operation, which include:

- CAP 764 *CAA policy and Guidelines on Wind Turbines*
- CAP 393 *Air Navigation Order: The Order and the Regulations*
- CAP 437 – *Offshore Helicopter Landing Areas – Guidelines on Standards*
- HS&E Offshore *Helideck Design Guidelines*

Aircraft Collision

As part of the Environmental Impact Assessment, Royal Haskoning has conducted an aviation study. The report sets out to identify the impacts of Dogger Bank Teesside A and B

development during the construction, operation and decommissioning phases. Where the potential for significant impacts is identified, it presents mitigation measures and residual impacts.

Where possible, consultation with the Regulatory Authorities and relevant stakeholders has identified appropriate mitigation to reduce the overall impact to an acceptable level.

Mitigation measures in accordance with those set out in CAP 764, Cap 437 include:

- Charting – all structures over 300ft in height must be charted on civil aviation maps;
- Lighting – on-going consultation with appropriate stakeholders as the design phase progresses will specify lighting requirements;
- Marking – Individual marking of turbine generators and blades will be incorporated as necessary;
- Radar conspicuousness – The size and type of the WTGs will ensure that the WTGs provide a satisfactory radar target able to be seen by SAR aircraft.

5.6. Having a Stable Foundation to Build on

As part of the development process, Forewind has undertaken a suite of geotechnical works across a wide area of the Dogger Bank project site, including cone penetrometer tests ('CPT') and boreholes. This information will be critical in informing us of the underlying ground conditions across the project site and the potential risk associated with the construction.

Data will be fed into secondary assessments, such as the development of leg penetration studies for jack-up construction vessels. Forewind will ensure that relevant publications and guidance, such as the Health and Safety Executive's

Research Report 289: *Guidelines for jack-up rigs with particular reference to foundation integrity* are referenced when developing the project's Construction Management Plan ('CMP'). Geotechnical data, such as soil information and predicted penetration curves, will be fed into these assessments to ensure that any risks can be mitigated as far as possible before construction commences.

5.7. Shallow / Dissolved Gas Release / Retention

Forewind has carried comprehensive site investigations in the Dogger Bank Zone. Due to the risks associated with shallow gas, now known to be present at some locations within sand layers across Dogger Bank, we have developed a shallow gas strategy to minimise any risk from intrusive works into the seabed (drilling, piling etc).
Through site investigation, we are aware that shallow gas may be present at Dogger Bank in three different states:

- Free gas sitting in the pore space
- Dissolved gas (in the soil)
- Free gas with excess pressure.

The main elements in the Forewind shallow gas strategy are based on detection and avoidance or full preparation to meet and handle shallow gas encountered in the sediments.

For piling and drilling generally, a detailed shallow gas clearance study must be made based on fit-for-purpose geophysical data. If there is a risk of shallow gas, the location will either be avoided (avoidance strategy) or specific shallow gas procedures and equipment will be installed on the vessel, i.e.:

- If there is no evidence of shallow gas based on geophysical data (class zero) and past experience within the area or geological setting, no specific actions or procedures will be required.
- If shallow gas cannot be excluded; the location or the relevant layer will not be penetrated without proper preparation, including:
  - Gas detection and monitoring equipment;
  - Physical barriers during piling and drilling operations (mainly aimed at avoiding shallow gas from reaching deck level);
  - Clear instructions on what to do if a shallow gas blow-out takes place sub-sea, or passes the barriers and reaches the deck.

The future developer's main objective is to avoid hazard to personnel, equipment and assets. The aim is to remove direct risk to personnel when drilling or piling in an area where shallow gas can be present.

5.8. Geotechnical Conditions – Ensuring Stable Assets

Forewind has commissioned high quality geophysical data along the export cable corridors and within the Dogger Bank project arrays, including multi-beam echo-sounder and side-scan sonar, acoustic ground discrimination systems ('AGDS'), marine magnetometer and shallow geological profiles. These detailed geotechnical studies during the development phase of the project will enable us to design the project in the manner most suitable to the ground conditions. Following the award of consent, we will undertake a project-specific campaign to determine ground conditions at the specific foundation locations and in areas where both inter-array and export cables will be installed.

Information from geotechnical surveys and the development of site-specific ground models will ensure stable assets throughout the operations and maintenance phase of the project. By designing for higher risk areas, our approach will ensure that the project can be constructed, operated and maintained in the safest possible manner.

5.9. Identified (and unidentified) Wrecks

The Protection of Wrecks Act, 1973 protects certain wreck sites in United Kingdom waters from unauthorised interference on account of either:

- Their historic, archaeological or artistic importance; or
- Their potentially dangerous condition.

In the case of historic wrecks in the first category, 'unauthorised interference' includes tampering with, damaging or removing any part of a wreck within the area indicated, or carrying out diving or salvage operations within the area, or depositing anything (i.e. anchoring) on the seabed within the area without a special licence issued by the Secretary of State. In the case of wrecks declared to be in a potentially dangerous condition, entry into the area is prohibited.

The Dogger Bank Zone is an area known to contain a significant number of vessels in both categories, and our policy of Forewind is to avoid them. Known or 'identified' wrecks can be pinpointed at the project design stage. However, there are a significant number of 'unidentified wrecks' in the development area that may be potentially dangerous due to their type or cargo.

Through thorough desk-based research and detailed site investigations using side-scan sonar and magnetometer surveys, we have endeavoured to locate and identify all contacts that may present a hazard to safe construction and operation. In addition and in accordance with best practice, we have agreed with appropriate stakeholders an avoidance strategy for the project area early in the design stage.

Our strategy during the detailed design and construction phase is to relocate turbines or cabling wherever possible. We will agree this approach with stakeholders and regulators, and make appropriate commitments as part of the environmental impact assessment ('EIA') process. This approach to risks will ensure that not only is the historic environment protected as far as possible, but also that hazards to personnel, equipment and assets can be avoided.

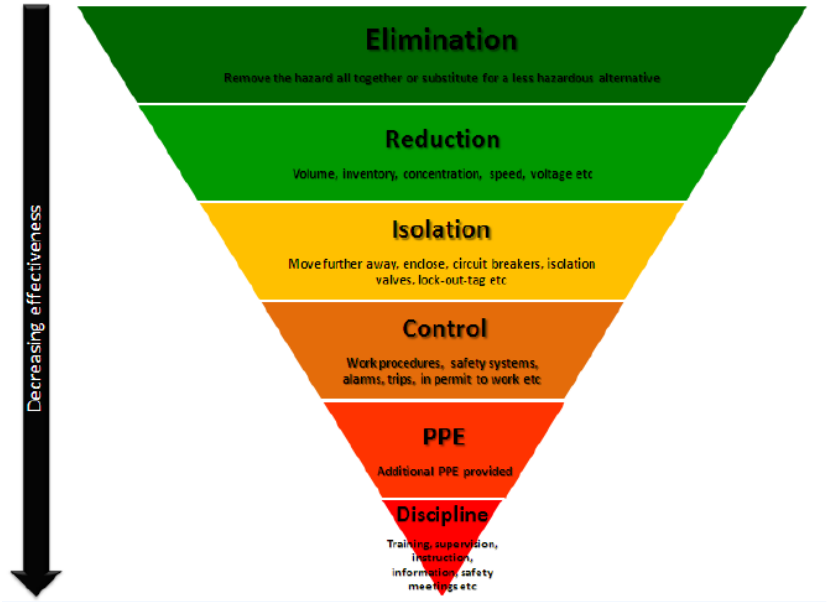
6. Principle 4 – Designing out Hazardous Activity

6.1. ALARP Principles

ALARP is the point at which the cost (in time, money and effort) of further risk reduction is grossly disproportionate to the risk reduction achieved. Thus ALARP describes the level to which we expect to see workplace risk controlled.

Forewind recognise that Dogger Bank challenges current risk assessment techniques used for offshore wind farms and that a more holistic approach to risk identification and management will be required. Forewind will design a bespoke ALARP design process, adopt a level of sophistication in risk assessment appropriate to the Dogger Bank project, and follow a well-defined hierarchy of risk control at all stages.

Fig 1. Control Hierarchy



However, at Forewind we perceive the offshore wind energy industry as still maturing and that best practice is still under development – so as a principle we, as a project, will strive as a collective team, to maintain a position as industry leader and recognise that existing best practice in many areas and must be continually improved.

6.2. Diving

Diving is a high-risk operation and is currently used offshore for activities such as cable installation and repair, inspections of structures, protection systems, recovery of dropped object etc.

To improve health and safety performance and minimise overall risk within the project, diving operations must be reduced or eliminated. This will involve both technology, e.g. use of Remote Operated Vehicles (ROVs), and careful design of both assets and methods.

At a minimum, all diving operations must comply with the IMCA Diving Rules and the Diving at Work Regulations and industry best practice.

Requirements for potential emergency response in the eventuality of an accident to a diver are considered the primary driver for minimum staffing and resources.

- The project requirements at this point preclude the use of SCUBA diving - full-face masks are mandatory.
- Diving operations to be carried out while pile installation (specifically hammering) is in progress must be fully risk assessed including noise hazards.
- A standby diver will be available at all times during a dive. It is not adequate for a 2nd diver to act as the standby diver.
- All operatives engaged in the diving / confined space operation, and rescue procedure, must be “single-tasked” and follow confined space diving requirements.
- The vessel owner can stop diving operations when required for safety at the cost of the contractor.
- Recompression: The Diving Contractor must be able to demonstrate that an injured diver can be recovered and transported to a recompression chamber within the prescribed time limits. Recompression facilities will be required at the offshore site.
- Individual diving specialists, contractors and all other person commissioning or supervising diving activity must ensure that recompression facilities, and means of transport are readily available before any diving operation commences.
- Work in confined spaces will be carried out in accordance with the Confined Spaces Regulations will all appropriate supervision, training, access control, permit system, check lists, monitoring, rescue kits and rescue capability being in place and tested prior to entry and associated lifting / diving operation being carried out.
- No diving will be carried out underneath live or suspended loads
- No fishing will be permitted from any of the structures

All proposed diving operations will be notified to Forewind, who will in turn advise the relevant diving inspector of proposed operations. A system of notifications in this respect will be established and controlled by the contractor. For the avoidance of doubt, the principal contractor will be the client in respect of the Diving at Work Regulations.

Developers will require copies of all Dive Plans, Method Statements, Risk Assessments and Emergency Plans and Rescue Procedures before any diving activity is permitted on the project.

6.3. Acceptance of “Certification” as Safe

We perceive product certification as one of the starting criteria only. We will undertake all aspects of design safety management, including code compliance, design risk analysis, fault assessment scenarios and the like, before we accept that it is safe and healthy for an operative to work with any product or equipment.

6.4. Work at Height – Falling / Falling Materials

Maintenance work will involve working at height. A risk assessment must be carried out and findings recorded, and protection must be in place to prevent people and objects falling.

6.5. Working With or Near to Electricity

Operational and maintenance activities involve working with electrical equipment capable of providing lethal levels of shock. Our arrangements for working with electricity shall adhere to The Electricity at Work Regulations. We will carry out risk assessments for all appropriate tasks and allow only suitable qualified and experienced persons to carry them out.

6.6. Lifting Operations

Arrangements for lifting operations will comply fully with UK LOLER Regulations 1998 and recognise the guidance in the HS&E *Technical Guidance on the Safe Use of Lifting Equipment Offshore* (HSG 221).

6.7. Limiting Man / Machine Interfaces

Forewind is committed to ensuring, where possible, the removal of the human element from activities where exposure to machinery could lead to an accident. We conducted the installation of the Dogger Bank met mast using a 'human free' technique to place the lattice tower on top of the foundation. There is a case study on our website.

6.8. Limiting Marine Transfers

Despite the proposed wind farm's distance and hostile conditions, Forewind is committed to ensuring safe and efficient access to installations. Height of waves can exceed 1.5m Hs throughout the year, resulting in longer transit times and thus requiring larger, faster and more expensive vessels.

During construction and commissioning, thousands of transfers can take place. With the offshore maintenance workforce being expected to provide turbine availability of more than 90% during the O&M phase, this can be a considerable challenge and introduce significant risk.

During O&M, a third of all personnel access is in response to an unplanned event or mechanical failure. Unplanned events are also more likely to occur during autumn and winter.
Response requires access for personnel and associated tools, equipment and spares.

We can limit the risks associated with transfers between vessels and offshore structures or other vessels in several ways. One of the simplest is to plan during development to reduce, where possible, the number of such transfers.

There are a number of access options currently in use and new methods and equipment are being developed to meet the challenge of safe access. We will select and use the best, but our key aim is to avoid excessive marine transfers during both the construction and O&M phases.

Reliability reduces unplanned interventions. The key word is reduction:

- Reduction of risk to personnel;
- Reduction of the effects on other marine users;
- Reduction in fuel consumption;
- Reduction of the project's carbon footprint;
- Reduction of environmental risk & impact;
- Reduction in risk to assets.

We intend as far as possible to design out or reduce the need for the developer to require excessive transfers offshore by maximising the amount of work and assembly carried out onshore, before the turbine or substation structures are transported offshore for installation.

6.9. Controlling Concurrent Vessel Activities

The risks arising from uncontrolled concurrent vessel activities include collision or interference between activities, which gives rise to other hazards (e.g. wash effects impacting on other vessels, radio/radar interference). The concurrent activities may arise from vessels under the control of the developer/operator or appointed contractors, or between such vessels and third party vessels over which the developer or operator does not have control, e.g. passing vessels, ferries. All vessel activities should be controlled in such a way as to significantly reduce risks. This will require marine coordination between activities under developer/ operator control, and between activities over which the developer/ operator has control over only one asset. The former will require planning of such activities to ensure de-confliction. The latter may require monitoring/ liaison to ensure that either activities do not occur or they cease when third party activities present a risk.

The developer and ultimate operators will do this by appointing an appropriately qualified and experienced person to a Marine Coordination role.

6.10. Fully Implement Design Risk Management (CDM)

As an integral part of risk reduction for all phases of the project, design risk management should be introduced at the earliest stage. It enables designers to assess their designs and introduce hierarchical measures to mitigate the associated risks associated at build, installation, operation and maintenance, and decommissioning. We shall consider the turbine configurations with optimal emergency response as a prime consideration.

Design review/coordination meetings should also be incorporated into project management at an early stage and a design risk register established to record design changes.

6.11. Supply Chain HSE Challenges

Many accidents at offshore wind projects have been caused by equipment, such as vessels or cranes working at or near their operational limits. As an industry where safety is paramount, it is only natural that health and safety performance across the entire supply chain will continue to be critical. When undertaking tendering, Forewind will select contractors based on safety performance, qualifications and merit as well as cost. This will include applying Norsok S-006 criteria when evaluating and selecting potential suppliers; incorporating HS&E requirements for products, deliveries and cooperation in invitations to tender, contracts and agreements; and verifying purchased goods and services to ensure that they meet our HS&E requirements. We will also ensure that suppliers' HS&E management and performance are monitored and followed up, and findings are taken into account when subsequent contracts are awarded.

We will work with our supply chain to negate and mitigate the impact of working further offshore and in more challenging conditions by, for example:

- Cooperating with our contractors and suppliers on a basis of mutual respect and trust;
- Promoting automated production and installation processes to reduce manual interventions wherever possible;
- Designing both offshore and onshore structures with safety as the primary consideration to ensure that structures and equipment designed can be installed and operated with the highest level of safety;
- Working with the supply chain to promote increased reliability of equipment and more efficient remote operational capability. This will reduce the burden of both operations and maintenance and therefore the exposure time of personnel. As planned service is generally considered safer, improved condition monitoring will also serve to improve the ratio of planned to unplanned service; and
- Ensuring that all project partners share our high regard for safety and working with them to ensure that this also applies to their own supply chain. This will ensure that partners share lessons learned to promote safer work processes. A greater degree of collaboration both vertically and horizontally within the supply chain will enhance this.

7. Principle 5 – Emergency Preparedness and Response

Forewind commissioned DNV and Anatec to carry out studies of the existing Emergency Response arrangements within the North Sea area to review national and international resources and arrangements, and those established by other commercial organisations. Among other things, the reports:

- Identify likely emergency scenarios for Dogger Bank Teesside A and B;
- Undertake gap analyses to identify where capability is limited or absent, and to consider the development's potential to increase or decrease emergency response capability;
- Identify potential emergency response requirements for listed scenarios that would require additional facilities above the current baseline. This includes consideration for mitigations, uncertainties, and options or alternatives;
- Identify key capability options that might be most relevant to a future emergency response plan.

The reports indicate the key issues that we needed to address in developing the emergency response arrangements.

Based on these studies, we will implement appropriate Emergency Response plans to address the possible scenarios and provide suitable and sufficient resources within agreed response times.

7.1. Emergency Response Cooperation Plan (ERCoP)

This plan is principally intended to ensure that incidents occurring offshore are coordinated in such a fashion that the wind farm operator, the SAR authorities and medical support organisations can manage emergency incidents in a timely and effective manner for the lifecycle of the project. Forewind's ERCoP will acknowledge the intrinsic issues of operating offshore where SAR assets are at the limit of their capability and ensure that adequate resources (including trained personnel) are available.

It is noted and appreciated that BP and other oil and gas companies operate a SAR programme named Jigsaw in the central and northern North Sea. All Jigsaw operations are coordinated through JIGCO. Where required, the coastguard may call on Jigsaw assets to offer assistance. However:

- The Miller platform with Super Puma helicopter is situated 226nm from both the centre of Dogger Bank Teesside A and B. This is outside the operational radius of 190nm.
- The four Rescue Standby Vessels' (RSVs) operating radius is outside the Dogger Bank location.

Forewind recognises the benefits of an offshore emergency response system integrated with other assets in the North Sea area and will endeavour to implement a system that minimises response times and brings appropriate assets to bear on incidents.

7.2. Adequate Preparation for Standard Person or Extended Stays

Given the possible prevailing conditions, personnel could be stranded on WTGs for significant periods of time despite appropriate planning and monitoring of weather forecasts. Breakdown of a vessel or helicopter can so delay departure from an offshore structure that it may be impossible to recover the personnel. In such a case, appropriate arrangements should be put in place to allow for extended stays on offshore structures.

8. Other Considerations

8.1. Ensure Zero Harm and Optimum Health during Life on Dogger Bank

Shift Working

Future Developers and Ultimate operators will refer to the UK HSE's advice on evaluating shifts systems (e.g. Offshore Information Sheet 7/2008 – *Guidance for Managing Shift work and Fatigue Offshore*) when considering working arrangements for personnel offshore.

Non-ionising Radiation

As well as satisfying general UK health and safety legislation, the proposed design and future operations must comply with the Electrical Safety, Quality and Continuity Regulations 2002. Generators, distributors, their contractors and others have defined duties to protect members of the public from the dangers posed by electrical equipment used.

Ensuring appropriate / adequate / safe vessels

With increasing demand, a shortage of vessels capable and suitable for operation in the demanding offshore environment could lead to the use of inappropriate, inadequate or unsafe vessels.

Vessel operators need to understand how the Health and Safety at Work etc Act of 1974 and its relevant statutory provisions apply to offshore construction projects in UK waters. There is evidence that some operators are neither aware of the Construction (Design & Management) Regulations 2007 and how it affects them, nor the 'Memorandum of Understanding' between the Health and Safety Executive and the Maritime and Coastguard Agency's Marine Accident Investigation Branch for health and safety enforcement activities etc.

Operators must be fully conversant with the requirements of the marine legislation concerning both equipment and personnel, and their responsibility for compliance and appropriate certification.

Forewind's policy ensures that vessel operators are educated about the industry's requirements. As a minimum, they must fully comply with MCA and associated Maritime legislation and exceed the minimum standards of all applicable approved codes of practice.

For health and safety in general, vessels and their associated equipment must meet our requirements for suitability (fit for purpose) and for HS&E standards.

Regular auditing and contractual penalties for non-conformances means that we are vigilant in both selection of vessels and chartered vessel management.

Jack-Up Vessels

Jack-Ups are complex structures, barges or vessels used offshore in various operating modes. Many are multi-purpose and can combine activities such as piling, transport and heavy lifting. Forewind's experience and deep understanding of the basics behind the different designs, of Jack-Ups and their limitation and capabilities under different operating conditions better equips us to plan and respond to the risk of 'punch-through' incidents, and to reduce or remove the possibility of an occurrence or significantly reduce its potential consequences.

When selecting a jack-up unit, we are aware of the importance of selecting those whose design and capabilities best suit them to the role and the environment in which they will be required to operate.

Selection considerations will include predicting leg penetration: to ensure that the rig's legs are long enough and will not punch through during installation. This is particularly important in areas where soft soils or thin, hard layers overlying softer soils are anticipated or have been indicated by site investigation. As an example of selection criteria, where there is a high risk of deep penetration and 'leg-sticking', selection will be weighted in favour of those jack-ups with leg-jetting systems. Through such detailed site investigation, forward planning, early engagement of contractors and consultancy aligned to rigid selection criteria, Forewind will reduce risk to *as low as reasonably practicable*.

Accommodation, Welfare, Recreation and Food

Statutory welfare arrangements are clearly stated in the CDM Regulations, which stipulate normal necessities and comforts, including provisions for hygiene, food and rest. Provision of sufficient accommodation is a priority to ensure the comfort of all personnel going offshore.

Accommodation
The Offshore Installations and Wells (Design and Consultation etc) Regulations 1996 detail accommodation standards offshore based on the principles of adequate space, privacy and comfort.

Future developers and ultimate operators of Dogger Bank projects are committed to providing statutory accommodation standards as a minimum. For example:

- Sufficient beds provided
- No 'hot bunking' permitted
- Provision for extra people temporarily on board
- No overcrowding permitted: minimum room height should be 2.3 metres. In making the volume calculation, a room or part of room more than 3.0 metres high should be counted as 3.0 metres high. Any room providing less than 6.9 cubic metres per person is considered overcrowded
- Adequate space for storage of clothes: this requires a number of cupboards and/or drawers that can be individually locked. The minimum numbers required will equal the number of bunks in the accommodation cabin
- Privacy: single occupancy of a cabin during a 24-hour period provides absolute privacy
- Sufficient number of showers, washing facilities and toilets
- Cabins with en-suite toilet/shower facilities shared between two cabins: one toilet and one shower between four persons is considered sufficient. Any inferior ratio is regarded as insufficient.
- No new installations with toilets, showers or washing facilities remote from cabins
- Toilets with clean hot and cold water with soap to wash and clean drinking water provided
- Sufficient drying rooms and storage and clean storage areas for clothes and PPE provided.

Recreation facilities

Appropriate offshore recreation facilities will be provided commensurate with the length of time personnel will be expected to spend there.

Food

A fully equipped canteen providing a wide-ranging menu and catering for most tastes will also prevent illness and a build-up of waste.

Long-Term Health Protection

The long-term health of all personnel considered at risk will be monitored throughout the project. Risk assessments should be undertaken at the earliest opportunity for all planned activities and appropriate control measures put in place.

The following principles shall apply:

- We will strive to reduce the health risk from our activities and products to *as low as reasonably practicable* (ALARP).
- We will identify, assess, control and review all relevant health risks;
- We will undertake a Health Impact Assessment for all our project-wide operations;
- We will set specific requirements, targets and improvement measures based on relevant knowledge and results from risk management;
- We will use Human Factors principles in the design and modification of work places and work processes;
- We will respect individual employees, develop and inspire them and promote an improved working environment and a health-promoting workplace;
- We will ensure that our operators meet relevant health requirements;
- We will monitor health and working environment status, and report and investigate incidents;
- We will assess and secure adequate local health facilities and Medical Emergency Response.

Electromagnetic Exposure

We have considered the risks from exposure to electromagnetic radiation sought advice from the Health Protection Agency Centre for Radiation Chemical and Environmental Hazards. Given the development's distance offshore, the HPA deems the potential for the public to be affected by any emissions as very small. Compliance with ICNIRP guidelines must be demonstrated.

Seasickness

As a minimum Personal survival technique (PST) training will be mandatory – resilience to this being a primary indicator of susceptibility, competent trained staff will be selected for all offshore activities who will have been exposed to the marine environment. Medication will be provided for anyone suffering from seasickness.

8.2. Keeping Communities Safe

Onshore Assets Risk to Public
Hazards to the public presented by onshore assets include:

- Fire/explosion
- Electrocution
- Falls from height.

Children in particular can be at risk due to their innate lack of understanding of the hazards associated with, say, electrical equipment.

Dogger Bank facilities will be designed so that risks to the public and their assets are ALARP. Assets will be fully secured to prevent the public from entering premises without appropriate permission.

Electricity – Protecting People and Livestock

Robust on-site security must ensure that members of the public and livestock are protected at

all times and that intruders are prevented from entering the site without permission. Certain design principles apply, including:

- Position of assets so that electrical equipment is away from normal activities;
- Maintenance of adequate separation between people, plant and vehicles;
- Control of access to authorised personnel only.

Traffic Hazards

Risk to both employees and the public will increase from levels and type of traffic associated with the facilities during the construction and operational phases. Workplace traffic accidents are one of the most common causes of fatalities in industry. When designing facilities, proper consideration should be given to anticipating foreseeable risks. Such risks may arise from the movement of vehicle and plant onto and around the site as well as on approach roads. It is vital that the design and layout ensures, as far as is reasonably practicable, safe pedestrian and traffic segregation and safe traffic movement of vehicles and plant.

Forewind has undertaken appropriate studies where required, e.g. for the onshore cabling and transformer, and will continue to take such action.

8.3. Fishing Safety

Given the history of fishing in the Dogger Bank area, Forewind recognises the potential impact of the development on fishing and, in particular, the risks presented to fishermen. We have therefore established a range of measures to mitigate the risks.

Liaison
We recognise that effective and meaningful consultation is an integral part of the development activities and are committed to maintaining a transparent approach to consultation and engagement.

Using the Renewables UK guidance document *Recommendations for Fisheries Liaison,* we have developed a Fisheries Liaison Plan (FLP), to inform the stakeholders from the fishing industry. The plan is intended to clarify our delivery objectives and our approach to liaison.

All liaison activities will also be in accordance with the Fisheries Liaison with Offshore Wind and Wet Renewables Group's (FLOWW) *Recommendations for Fisheries Liaison - Best Practice guidance for offshore renewables developers* (BERR, 2008).

Forewind will endeavour to inform all sectors of the fishing industry, operating within both the offshore development zone and the cable corridor, of the activities proposed. We will engage with key stakeholder representatives at the earliest opportunity to develop and implement the following objectives:

- Understand the potential concerns and objections;
- Provide necessary information to allow them to work safely;
- Maintain a productive working relationship;
- Identify sources of fisheries information that will contribute to the Environmental Impact Assessments;
- Maintain an iterative consultation process;
- Comply with existing guidelines for fisheries liaison.

Fisheries Liaison Roles
Forewind has contracted experienced and skilled individuals with considerable understanding of the fishing industry within the North Sea for the role of 'Fisheries Liaison Coordinator' (FLC) for

Dogger Bank. The FLC function has been split into two roles:

- Cable corridor and near-shore FLC to be undertaken by Precision Marine Survey Limited (PMSL);
- Wind farm zone FLC to be undertaken by Brown & May Marine Limited (BMM).

We have also appointed Fisheries Liaison Representatives (FLRs) and Fisheries Industry Representatives (FIRs) to ensure effective liaison and oversight of activities, and established a database of contacts for all international, national and local fisheries organisations.

Dominant Fishing industry Hazards
Forewind does not intend to apply for restrictions on fishing activity within the wind farm areas post construction. Restrictions will be limited to the construction phase. The most sustainable approach to coexistence is to avoid and reduce impacts. In some cases, however, mitigation, including methods of mitigating disruption, will be the most appropriate measure. A successful mitigation strategy requires open and continuous communication between Forewind and the fishing industry. Although we will address mitigation appropriately when needed and on a case-by-case basis, we have identified specific risks for which mitigation controls are appropriate.

Net Snagging on Cables or Foundations
We will provide timely and accurate information for fishermen on cables and foundations to the Kingfisher Information Service - Offshore Renewable and Cable Awareness project (KIS-ORCA).

Poor Communications / Poor Relationships
The Forewind Fisheries Liaison Plan, as described above, is intended to provide appropriate levels and types of communication channels to maintain and act upon two-way information flow.

8.4. Security of Supplies and Assets

The current UK offshore capacity of 3,653 MW[1] is set to double by 2014-2015. However, as our dependence on offshore renewable energy increases, so does the need to secure our supply from all threats.

The onshore grid connection of any offshore wind farm would normally be more vulnerable to terrorist attack, sabotage and pilferage than its offshore assets, but no more so than any traditional power generating plant (other than nuclear facilities).

The transmission network is vulnerable due to limited points of connectivity (Landfall). Vulnerability of cables at the transition point from deep water to landing points is a major concern, given an inability to redirect power into the grid from secondary connection points in the event of outages caused by failure of the connection, perhaps due to damage from ships' anchors, terrorist attack, sabotage, tampering, theft or natural events.

The offshore infrastructure would be more resilient to terrorist attack, sabotage, tampering, or pilferage because of its remoteness and greater dispersal of assets over a wider area. Although terrorist attack and sabotage of an offshore substation would have a more significant and longer-lasting effect on the wind farm's ability to export power to the grid, it would require significantly more planning and assets than an attack on a shore-side facility, with a concomitantly higher risk of detection and apprehension.

[1] www.renewableuk.com

Through consultation, research assessment and design, and using security planning and technology, Forewind has attempted to reduce the vulnerability to natural events, wilful damage, sabotage, pilferage or terrorism of all the assets described here to *as low as reasonably practicable.*

Terrorism and Sabotage

The aim of project security planning is to mitigate the risks identified in the project's initial Security Assessment. This comprises Forewind's plan to protect the project's facilities, assets and employees against seizure, wilful damage, annoyance, sabotage, piracy, pilferage or terrorism throughout construction and for the lifetime of the project. It embraces all measures needed to prevent interference with the lawful operation of any facilities, plant or vessels related to the project as a whole, and to provide an uninterrupted supply to the grid. It also includes measures necessary to respond to breaches of security.

The primary objectives of this project security-planning are to ensure that vessels involved with the project do not introduce threats (on) to or near the structures; that vessels are secure and operators and personnel are properly vetted; that project or non-project vessels entering the wind farm area are monitored.; and that consultation, cooperation and coordination is carried out with organisations or authorities responsible for managing safety and security within the UK.

We have identified and actively consulted the following key stakeholders in respect of Security and Emergency Response that may be affected by our assets and activities:

- MCA
- Defence Infrastructure Organisation (Safeguarding)
- Ministry of Defence (Royal Air Force)
- Ministry of Defence (Royal Navy)
- RNLI

So that Forewind, as the facility owner/operator, can meet its obligations to ensure the safety of the wind farm and its personnel, the project's security assessments, discussions with the above entities and/or reviews of published recommendations have together emphasised where asset vulnerabilities are greatest and where individual assets are most at risk from seizure, wilful damage, annoyance, sabotage, piracy, pilferage or terrorism.

The future developers and ultimate operators will implement a security programme that incorporates appropriate preparation, prevention, and any response activities needed. Access to the facilities will be limited by physically securing assets, by vetting individuals, and by monitoring activities within or close to these assets. We will:

- Monitor and take actions to keep a high standard of information security;
- Conduct security analyses when establishing the projects and the joint ventures;
- Implement security measures based on security analysis and as advised by security authorities;
- Provide relevant basic training in security measures for all personnel;
- Investigate all major security incidents;
- Report evidence of criminal offence to the police;
- Work with official authorities to improve security for our personnel and assets.

Explosive / UXO / EOD

The Bactec report 3317TA recognises the potential for World War II aerial ordnance throughout the study area. The greater part of Dogger Bank is a medium risk zone (Figure 1). The main threats from UXO outlined in the report are the presence of minefields from both world wars. The presence of UXO from sources varying from jettisoned aerial bombs to shells fired during naval battles in the vicinity poses other risks.

Items of UXO are regularly encountered in the North Sea. These devices rarely become inert or lose their explosive effectiveness with age, even items that have been submersed in water and/or lodged within the seabed.

Over time, mechanisms such as fuses can become more sensitive to vibration or shock/impact, and therefore more prone to detonation. It is possible that significant kinetic energy created by the intense impacts generated by marine engineering, such as cable trenching and piling, could cause an inadvertent detonation. Forewind has therefore conducted a detailed Unexploded Ordnance (UXO) Threat and Risk Assessment for the Dogger Bank Zone. It aims to address the UXO risk management process by providing a holistic overview of UXO threats and risks for the entire marine operation. This includes employing background research and engaging specialist third parties to assess the risks and reduce them to *as low as reasonably practicable* through detailed site-mapping, design and methodology.

Note: Please refer to G-04-08-SBPHAZARD and G-04-08-UXOCLEARA for UXO and subsurface hazard analysis.

References and related documents

- Guideline for UXO clearance assessment, G-04-08-UXOCLEARA
- Guideline for subsurface geohazard assessment, G-04-08-SBPHAZARD
- Side Scan Sonar processing and interpretation, I-04-08-SSSINTERP
- Multibeam processing and interpretation, I-04-08-MBEINTERP
- Magnetometer processing and interpretation, I-04-08-MAGINTERP
- Geophysical data evaluation form, F-04-08-GEOEVALUA

Sources of Information

Sources consulted for the report included:

- UK Hydrographic Office, Taunton
- Department of Research and Information Services (DoRIS), RAF Hendon
- Royal Navy (Southern Diving Unit), Portsmouth
- The National Archives, Kew
- Naval Historical Centre, Portsmouth

Organised Crime

This is defined as:

- The presence of groups of three persons or more whose main aim is profit, but excluding groups with primarily social/political objectives; Groups operating systematically (e.g. division of tasks/roles, informal hierarchy, previous planning and/or organisation of illegal activities);
- Participation of the groups in criminal or illegal activities.

Theft & Pilferage

The project would be most at risk from organised crime with regard to theft or pilferage. These activities involve the misappropriation of property without the consent of the owner.

One identified activity within the UK often related to organised crime is the theft of heavy equipment (e.g. construction machinery and equipment), which has reportedly been smuggled out of the UK and exported worldwide.

The increasing demand for non-ferrous metals from fast growing economies, such as India and China, appears to encourage organised crime (particularly the theft of copper and cables). This

has had a dramatic and costly impact on the UK rail and power and telecommunications networks among others.

Through consultation, research and design and using modern technology, Forewind has attempted to reduce the vulnerability to theft and pilferage of these assets to *as low as reasonably practicable*.

8.5. Respecting Other Existing Assets and Facilities

Existing Explosives Storage facilities

Although the indicative cable routes and other elements of the development do not impinge on the separation distances of any explosive site licensed by the HSE, the explosive sites at Hollym and Cottingham may impinge on the indicative cable routes – these will be modified accordingly.

Recreational and other Sporting Activities

Forewind has undertaken a Marine Hazards Worksop in April 2012 to assess the impacts on recreational and sporting activities, and these are taken into account as far as possible in the layout planning.

Cables & Pipelines

Forewind has studied the offshore cables and pipelines serving the oil and gas industries. Several transect the Dogger Bank Zone and Offshore cable route. Two active telecommunications cables, 'VSNL North Europe' and 'UK-Germany 6', and one out-of-service telecommunications cable, 'UK-Denmark 4', intersect this zone. The SEAL gas pipeline also passes within its boundary.

Other cables and pipelines, including operational and proposed export cables serving wind farms closer to shore, and a network of pipelines serving gas platforms and terminals in the southern part of the Offshore ZDE, occur in the Offshore Cable Area.

The HSE Land Use Planning Division has identified that certain elements of the planned development (i.e. shore-based cable corridors and converter stations) fall within the Consultation Distances for two Major Accident Hazard Pipelines (MAHP), operated or owned by Northern Gas Networks and SABIC UK. While the HSE is unlikely to advise against the cable corridors, the converter stations will need to be assessed for types and numbers of persons and building layout.

Archaeology

Forewind has commissioned an Archaeology and Cultural history Technical report from Wessex Archaeology. Conducted in accordance with appropriate guidelines, it identifies all potential impacts during construction, operation and decommissioning. The report will determine the siting of individual elements of the wind farm.

Minerals Extraction

Forewind undertook a site selection study to establish the potential footprint of the various tranches of development. It identified the constraints that would limit the development and deemed them either as 'hard' or 'consentable' by a specified date. Areas licensed for minerals extraction were considered as 'hard' constraints. A number were identified and a 500m 'buffer' applied in which no development would be considered.

Remote data Collection Assets (Wave Buoys / Met Masts)

Forewind is in the process of installing and commissioning two meteorological masts to collect and transmit data on metocean conditions for technical and commercial assessment of the enterprise. The two masts will be operated and maintained for the life of the project. As such, they have been designed to include full identification and navigational safeguards, and we are committed to their full life-cycle care.

8.6. Protecting Habitat, Species and the Planet

Controlling Incoming Pollution from O&G Incidents

Prior to construction, Forewind will produce and agree a Marine Pollution Contingency Plan ('MPCP') with key stakeholders, including the Marine Management Organisation ('MMO'), the Maritime and Coastguard Agency's ('MCA') and, where appropriate, oil and gas operators. The MCPC will detail how we will respond to any offshore pollution incidents and highlight responsibilities for concomitant actions.

As part of our commitment to best practice, we will develop an Emergency Response and Co-operation Plan ('ERCoP') with oil and gas operators that may affect our site through a pollution incident, or that may be likewise affected by our activities.

The MCA's Construction phase ERCoP template (Version number: 23.07.12) lays down content of the ERCoP, which will be developed jointly by industry and the MCA. It will therefore go through iterative development with key offshore stakeholders to result in a comprehensive document, which will address the likely scenarios that may impact on either the construction or operational phases of the Dogger Bank project.

The ERCoP's purpose is to serve as a reference for all parties' emergency response teams during any incident on, within or close to either the Dogger Bank project or oil and gas infrastructure. Immediate response to any incidents involving wind farm personnel will remain the responsibility of Forewind, and we will have the necessary appropriate resources, training and procedures in place.

Robust Storage/Handling/ Use or Transport of Hazardous Materials

Inadequate controls for the storage, handling, use or transport of hazardous materials can create risks to employees and the public. There is no indication that the development will include storage or use of hazardous substances at or above specific quantities (thus governed by COMAH Regulations and requiring consent from the Hazardous Substance Authority HSA in accordance with the Planning Hazardous Substances (Amendment) (England) Regulations 2010). However, workplace materials will require proper control and risk assessment in accordance with UK COSHH Regulations.

Adequate Pollution Prevention & Control

Inadequate pollution prevention and control can result in hazardous substances and materials being released into the marine environment and damaging ecosystems. Waste management, disposal arrangements and a chemical risk assessment are included within the project's environmental management and monitoring plan.

8.7. Managing Change

It is worth repeating that Forewind considers this Health and Safety statement a 'live' document to be progressively reviewed and updated to capture practice and associated learning as the zone evolves. We envisage that substantial modifications will be required as the project progresses, and that a means of communication to all project participants will be necessary to maintain an overview.

Forewind operates a formal system of change-control, which includes authorisation of activity up to board level. We will always use a systematic risk-based approach to manage change.

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