



Hornsea Project Four

A1.5.1: Environmental Impact Assessment Methodology Schedule of Change

Section 51 update, Date: 14 January 2022

Document Reference: A1.5.1

Revision: 01

Prepared Orsted, 12 January 2022
Checked Thomas Watts, Orsted, 13 January 2022
Accepted Hannah Towner-Roethe, Orsted, 13 January 2022
Approved Julian Carolan, Orsted, 14 January 2022

A1.5.1
Ver. no. A

Revision Summary

<i>Rev</i>	<i>Date</i>	<i>Prepared by</i>	<i>Checked by</i>	<i>Approved by</i>
01	14/01/2022	Orsted, January 2022	Hannah Towner-Roethe, January 2022	Julian Carolan, January 2022

Revision Change Log

<i>Rev</i>	<i>Page</i>	<i>Section</i>	<i>Description</i>
01	N/A	N/A	Submitted as part of Applicant response to Section 51 advice.

Table of Contents

Appendix A Professional Expertise in relation to the ES6

List of Tables

Table 1: Section 51 Amendments..... 5

Glossary

Term	Definition
Section 51 update - None	-

Acronyms

Term	Definition
Section 51 update - None	-

Table 1: Section 51 Amendments.

Section 51					
<i>Amendment ID</i>	<i>Location of Amendment</i>	<i>New Location (if numbering amended)</i>	<i>Amendment Proposer</i>	<i>Reason for Amendment</i>	<i>Amendment</i>
0.001	Table 5.5	N/A	Planning Inspectorate	Section 51 advice	Removed " such as hydrogen " further to the Applicant's signposting document (OD-002)
0.002	N/A	N/A	Planning Inspectorate	Section 51 advice - Professional Expertise in relation to the ES	A table showing the detailed professional expertise of the companies responsible for compiling the relevant chapters of the ES has been created. The table is included in Appendix A of this Schedule of Change for reference. This table will be inserted in Section 5.10 after an additional preceding sentence " Further details are provided in Table 5.6. "

Appendix A Professional Expertise in relation to the ES

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
<i>Offshore (ES Volume A2)</i>			
Marine Geology, Oceanography and Physical Processes	Cooper Marine Advisors Ltd	<p>Over 30 years of consultancy experience in marine studies and numerical modelling, including more than 20 years supporting offshore wind projects.</p> <p>Lead author / co-author of key industry guidance in delivery of offshore wind coastal process studies and evidence reviews.</p> <p>BSc Oceanography.</p>	<p>Cooper Marine Advisors Ltd is a specialist consultancy delivering coastal and marine process studies. Since formation in 2016, we have delivered technical studies to support more than ten offshore wind developments worldwide (UK, Ireland, Japan, and South Korea).</p> <p>Their expertise includes literature reviews, gap analysis, specification and review of geophysical and met ocean surveys, specification and review of modelling, near-field assessments (e.g. foundation scouring, spoil disposal, etc.), seabed mobility assessments, and drafting of EIA chapters.</p>
	ABPmer	<p>PhD, BSc. Eighteen years professional experience, with expertise in coastal oceanography, sediment dynamics, numerical modelling and offshore wind farm EIA.</p> <p>ABPmer are registered with IEMA EIA Quality Mark.</p>	<p>ABPmer is an established marine services consultancy with extensive experience in offshore wind farm EIA. ABPmer has provided a range of services, supporting consenting, planning and design to over 30 UK offshore wind farms, including all rounds of development to date. ABPmer is also highly experienced in the development and use of numerical modelling to support such assessments.</p>
Benthic and Intertidal Ecology	GoBe Consultants Ltd	<p>12 years of experience.</p> <p>Benthic Ecology Technical Lead within GoBe Consultants Ltd.</p> <p>GoBe Consultants are registered with IEMA EIA Quality Mark.</p>	<p>GoBe is an independent environment and planning consultancy offering a broad range of expertise and experience in the offshore, marine and coastal, and onshore development sectors. GoBe have provided benthic subtidal and intertidal ecology advice to more than 19 separate offshore wind projects since 2009. GoBe technical specialists have substantial experience undertaking both field and desk-based benthic and intertidal ecology assessments.</p>
Fish and Shellfish Ecology	GoBe Consultants Ltd	<p>6 years of experience.</p> <p>GoBe Consultants are registered with IEMA EIA Quality Mark.</p>	<p>GoBe is an independent environment and planning consultancy offering a broad range of expertise and experience in the offshore, marine and coastal, and onshore development sectors. GoBe have provided fish and shellfish ecology advice to more than 19 separate</p>

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
			offshore wind projects since 2009. GoBe technical specialists have substantial experience undertaking both field and desk-based subtidal fish and shellfish ecology assessments.
Marine Mammals	SMRU Consulting	8 years' experience in marine mammal consultancy Member of SUT XCOM (Society for Underwater Technology, Explosives Subcommittee)	SMRU Consulting is a world leading marine mammal consultancy with extensive experience in assessing the impacts of underwater noise on marine mammals. Their team includes highly specialised staff with decades of experience in marine mammal research, biology, hearing and impacts of noise on marine mammals. SMRU Consulting have provided EIAs, HRAs and CIAs for several offshore activities around the UK and they ensure that their noise impact assessments use the latest and best scientific data available to inform their approach.
Offshore and Intertidal Ornithology	APEM Ltd	15 years of ornithology EIA experience. Ornithology EIA Lead within APEM Ltd. Masters in EIA & Management (from Manchester University) and Fellow Member of the British Trust for Ornithology.	APEM Ltd is Europe's leading independent environmental consultancy specialising in terrestrial, freshwater and marine ecology and aerial digital surveys. Their team have extensive experience of collecting, analysing and interpreting data from multiple sources on seabirds and waterbirds within offshore wind farm sites, cable corridors, cable landfall sites and onshore environments within the UK and globally for the purpose of baseline reporting through to impact assessments (EIA & HRA) and representing clients through PINS Examinations. Their team have led on ornithology baseline data and impact assessments contributing to the consenting of over 10GW of UK OWFs.
Commercial Fisheries	Poseidon Aquatic Resource Management	Sixteen years of experience. Marine renewables lead within Poseidon. IEMA Associate Assessment (2007). Marine Stewardship Council (MSC) Principles and Criteria, Fisheries Certification Process, Scoring a Fishery – Fishery Team Member, Principle 2: Ecosystem (2013, 2016 and 2021).	Poseidon Aquatic Resource Management Ltd were founded in 2001 and provide high quality outputs and solutions across a range of fisheries and blue economy projects, delivered by a core team of seven staff members, and Poseidon's network of specialist independent consultants. Together with excellent consultation, organisation and communication skills, Poseidon bring a full understanding of the methodology and best practise for undertaking commercial fisheries impact assessments across a range of marine renewables projects. Poseidon have invaluable experience in leading every stage for the commercial fisheries elements of Section 36 Consent and Development Consent Order (DCO) applications for nationally significant offshore wind farm projects.

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
Shipping and Navigation	Anatec Limited	<p>Over 22 years in the marine industry and over 13 years specifically in offshore renewables and navigation risk assessments.</p> <p>BSc Shipping and Navigation</p> <p>PostGradCert Shipping Ports and Environment</p>	<p>Anatec Ltd were founded in 2001 and are a market leader in risk-based decision making providing consultancy services in a variety of sectors including offshore O&G, shipping and renewables.</p> <p>Anatec has extensive and specialist experience of carrying out navigation risk assessments for offshore renewables projects within the UK and worldwide. Anatec has a team dedicated to NRA work and our key personnel have been at the forefront of the marine hazard analysis and risk management field for the last 20-30 years. During this time, we have worked closely with regulators and industry (ports, vessel operators, etc.) to ensure the analysis we provide satisfies their requirements.</p>
Aviation and Radar	Osprey Consulting Services Ltd	<p>10 years of experience in the assessment of wind farm developments to aviation infrastructure and operations.</p> <p>Member of the Royal Aeronautical Society</p> <p>Former Air Traffic Controller with over 22 years of experience in the role.</p>	<p>Osprey Consulting Services Limited (Osprey) is part of Tp Group plc (tpgroup), the specialist services and engineering group are a global leader in consulting, digital solutions and engineering services across defence, space and energy programmes. Osprey Consulting Services are a specialist technical company, founded in 2006 with the purpose of developing a highly credible, informed consultancy, operating exclusively on aviation related projects. Over the past fifteen years, Osprey has developed a reputation for excellence in the field of wind energy and aviation impact. We are one of the UK's leading experts in the management of the impact of wind energy on aviation systems and we have worked with a wide range of wind farm developers and UK regional airports. They have provided a significant level of expert witness support to the Aviation market and supported various planning approval activities.</p>
Marine Archaeology	Maritime Archaeology Ltd	<p>16 years of experience.</p> <p>Senior Consultant at Maritime Archaeology a Registered Organisation of the Chartered Institute for Archaeologists.</p>	<p>Maritime Archaeology Ltd (MA) provides a professional consultancy and project management service based around strong client relationships. This service is grounded in excellent communication and our experienced staff consistently deliver a high-quality product and level of client care. MA ensures that maritime and coastal archaeological work is carried out to the highest professional standards and is consistently focussed on reducing time and cost. MA have supported offshore developers on numerous projects over the last 17 years, including scoping, EIA and post-consent projects.</p>

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
			<p>Their dedicated team draws on experience derived from the work of the parent organisation and registered UK charity, the Maritime Archaeology Trust, since 1991. As a Registered Archaeological Organisation (RAO) with the Chartered Institute for Archaeologists (CIfA), MA have a record of high-quality deliverables with 13 full-time staff working across a range of research and commercial projects. Their portfolio of large-scale offshore renewables projects is centred on EIA driven investigation and post-consent compliance and implementation of mitigation.</p>
Seascape Landscape and Visual Resources	Optimised Environments Ltd.	<p>BA (Hons) Landscape Architecture</p> <p>Chartered Member of the Landscape Institute (CMLI)</p> <p>28 years' experience.</p>	<p>Optimised Environments Limited or "OPEN" is a multidisciplinary design company with masterplanning, urban design, landscape architecture, architecture and environmental planning at its core. The professionals who work at OPEN have a vast depth of experience in the design, planning and assessment of the built environment. OPEN has particularly strong reputation in the LVIA for renewable energy developments and its staff have worked on over 350 onshore wind farm sites across the UK, many of which are now operational, under-construction or consented. OPEN has been involved in some 20 offshore wind farm projects since 2010. OPEN is widely recognised as providing robust LVIA and expert witness services of the highest quality according with best practice.</p>
Infrastructure and Other Users (Offshore Infrastructure Interfaces)	EPConsult	<p>20 years of experience.</p> <p>EPConsult Energies Ltd. is a technical energy consultancy, with memberships of:</p> <ul style="list-style-type: none"> Member of Energy Institute, Member of Renewables UK, Member of the Danish-UK Association. <p>Certified as ISO 9001:2015 quality management compliant under certificate number FS 561273 for "Provision of consultancy services in the areas of feasibility studies, field development engineering, conceptual design, project</p>	<p>EPConsult Energies (EPEn) is an independent UK-Danish oil, gas, and renewables consultancy with a head office in London and a satellite office in Copenhagen, Denmark. EPEn specialises in high-end project services, investment strategy, feasibility studies, field development planning, niche engineering consultancy, risk and opportunity management, technical risk assessment and HSE studies, technical reviews, due diligence, asset integrity and performance, and expert witnessing.</p>

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
		management, risk management, health, safety and environment assessment, and asset integrity management for the energy sector".	
Infrastructure and Other Users (Allision)	Anatec	30 years of experience BSc (Hons) MSc	Anatec Ltd were founded in 2001 and are a market leader in risk-based decision making providing consultancy services in a variety of sectors including offshore O&G, shipping, ports and renewables. Anatec have carried out Collision Risk Assessments for the Safety Case's for the vast majority of Oil and Gas installations on the UKCS as well as a large number of ship collision studies for Oil and Gas Majors worldwide. Anatec's tools and software models are recommended by the OGP.
Infrastructure and Other Users (Radar Early Warning Systems)	Manchester Advances Radar Services	PhD, BEng. Over 16 years of experience	Manchester Advanced Radar Services (MARS) Ltd is a radar and wireless communications consultancy that was founded in 2016 as a spin-off from the Department of Electrical and Electronic Engineering at the University of Manchester. The technical team at MARS has over 40 years of combined experience in studying, modelling and mitigating the potential impact of wind farms on navigation and aviation radars. MARS Ltd was the lead investigator in the assessment of the impact of wind farms on Radar Early Warning Systems and offshore traffic management radar systems for various wind farms in the UK and Europe.
Infrastructure and Other Users (Helicopters)	M Prior Consulting Ltd	42 years of experience Fellow of the Royal Aeronautical Society and Chair of the Rotorcraft Specialist Group Member of the ICAO Helicopter Sub-Committee	M Prior Consulting Ltd was established in 2016 and is a company specialising in helicopter safety and operations. It provides aviation technical support to the offshore renewables sector, oil and gas operations, national SAR operations, the UK CAA and aviation safety investigations.
Infrastructure and Other Users (Chapter)	GoBe Consultants Ltd	10 years of experience.	GoBe is an independent environment and planning consultancy offering a broad range of expertise and experience in the offshore, marine and coastal, and onshore development

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
		GoBe Consultants are registered with IEMA EIA Quality Mark.	sectors. GoBe have a wealth of experience in delivering similar chapters for the offshore wind and also aggregates sector.
Subsea Noise	Subacoustech Environmental Ltd	Member of the Institute of Acoustics (MIOA). The lead author has continuous post-graduate consultancy experience since 2001 in design and assessment of both underwater and traditional airborne noise situations. Acts as an expert witness for planning enquiries with respect to underwater noise and its effects on marine life. The author has led the underwater noise EIA element for most offshore wind farms in the UK.	Subacoustech has over 25 years' experience in specialist underwater noise consultancy. Having successfully completed hundreds of consultancy and research projects, Subacoustech have first-hand experience and expert knowledge of every type marine development activity in common usage including the assessment of impact on marine fauna. They have undertaken environmental impact assessments for the majority of Round 1, 2, 3 and 4 offshore wind farms currently consented or going through the consenting process in England, Scotland and Wales and carried out monitoring for underwater noise during construction of many of them. These include Sofia, Galloper, Dogger Bank Creyke Beck, Triton Knoll, Teesside A, Seagreen Alpha, Inch Cape and Moray Firth, Hornsea Projects One to Four, East Anglia 2 and 1 North, Norfolk Boreas and Norfolk Vanguard, and many others

Onshore (ES Volume A3)

Geology and Ground Conditions	Royal HaskoningDHV	<p>IEMA Geological Society of London (FGS) Society of Brownfield Risk Assessment (SoBRA)</p> <p>12 years of experience.</p> <p>Member of the Association of Geotechnical & Geoenvironmental Specialists (AGS) Contaminated Land Working Group.</p> <p>Fellow of the Geological Society of London (FGS).</p> <p>Member of the Land and Soils in Environmental Impact Assessment (EIA) Working Group.</p> <p>Member of the Society of Brownfield Risk Assessment (SoBRA).</p>	<p>Royal HaskoningDHV is the United Kingdom (UK)'s leading EIA consultant working in the offshore wind sector, successfully leading the EIA and consent process for over 12 Gigawatts (GW) of UK offshore wind projects, including six successful development consent order (DCO) applications.</p> <p>Royal HaskoningDHV has taken a significant role in providing environmental, Environmental Impact Assessment (EIA) and consenting technical consultancy services to over 20 UK offshore wind farm projects. In addition, Royal HaskoningDHV holds the EIA quality mark from the Institute of Environmental Management and Assessment (IEMA).</p> <p>All Royal HaskoningDHV's lead authors are senior and chartered professionals with a significant track record in undertaking technical assessment and EIA in their discipline. The team undertaking the onshore EIA for Hornsea Four are predominantly Royal HaskoningDHV professional consultants. The team is comprised of a dedicated core team of EIA professionals who take the lead role in the co-ordination and management of the EIA and the preparation of the onshore technical chapters for the ES. The core team is then</p>
-------------------------------	--------------------	---	--

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
Land Use and Agriculture	Royal HaskoningDHV	IEMA 29 years of experience. EIA Practitioner of IEMA.	supported by a wider team of technical specialists taking responsibility of the data collection, data analysis and technical impact assessment.
Air Quality	Royal HaskoningDHV	IEMA Institute of Air Quality Management (IAQM) 35 years of experience. Air Quality Practice Lead within Royal HaskoningDHV. Chartered and Full Member of CIWEM. Full Member of IAQM.	In all cases the assessment has a lead technical author who is a recognised expert in their field, is a member of a relevant professional body and has significant experience of impact assessments. The lead author takes responsibility for the quality and veracity of the data gathered and used in the assessment, the impact assessment methodology to be undertaken, the impact assessments made, and any proposed mitigation and monitoring measures proposed. The lead author is usually supported by a team and their work is subject to both technical and consistency review by a Technical Director and the onshore EIA core team.
Noise and Vibration	Royal HaskoningDHV	IEMA Institute of Acoustics (IOA) 22 years of experience. Corporate Member of the Institute of Acoustics.	
Traffic and Transport	Royal HaskoningDHV	Chartered Institution of Highways and Transportation (CIHT) 15 years of experience. Chartered Institution of Highways and Transportation. Member of the Society of Road Safety Auditors.	
Historic Environment	Royal HaskoningDHV	Chartered Institute for Archaeologists (CIA) 14 years of experience.	

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
		<p>Historic Environment Practice Lead within Royal HaskoningDHV.</p> <p>Full Member of the Chartered Institute for Archaeologists.</p>	
Hydrology and Flood Risk	Royal HaskoningDHV	<p>IEMA</p> <p>Chartered Institution of Water and Environmental Management (CIWEM)</p> <p>17 years of experience.</p> <p>Water Section Lead within Royal HaskoningDHV.</p> <p>Chartered Geographer (Geomorphologist)</p> <p>Fellow of the Royal Geographical Society.</p> <p>Member, British Society for Geomorphology</p>	
Ecology and Nature Conservation	Royal HaskoningDHV	<p>Chartered Institute of Ecology and Environmental Management (CIEEM)</p> <p>15 years of experience.</p> <p>Terrestrial Ecology Practice Lead within Royal HaskoningDHV.</p> <p>Chartered and Full Member of CIEEM and the Society of Environment.</p>	
Landscape and Visual	Land Use Consultants (LUC)	<p>Chartered Institute of Landscape Architects (CILA)</p> <p>17 years of experience.</p> <p>Full Member of CILA.</p>	<p>LUC is an award-winning environmental consultancy providing planning, impact assessment, landscape design, ecology and geospatial services to a wider range of public and private sector clients.</p> <p>The lead author for the landscape and visual impact ES chapter is a member of the CILA and has over seventeen years' experience in a range of landscape planning and assessment projects.</p>

Environmental Technical Topic	Consultant/ Author	Technical Lead Author Expertise and Professional Accreditation	Summary of Competency
			The lead author's work was subject to both technical and consistency review by a Technical Director and the Royal HaskoningDHV core team.
Socio-economics	Hatch	30 years of experience Project director	Expertise in rigorous and independent assessment of social and economic impacts across a range of policies, projects and investments. Socio-economic impact assessment work experience includes major energy generation (including significant offshore wind farm related work), housing, mixed-use retail schemes.