Environmental Impact Assessment Report
Volume 1, Chapter 20: Water Resources and Flood Risk

MarramWind Offshore Wind Farm

December 2025

MarramWind

Document code:	MAR-GEN-ENV-REP-WSP-000046
Contractor document number:	852346-WEIS-IA-I6-RP-W6-100141
Version:	Final for Submission
Date:	08/12/2025
Prepared by:	WSP UK Limited
Checked by:	WSP UK Limited
Accepted by:	MarramWind Limited

Contents

20. Water Resources and Flood Risk

20.1 Introduction

20.1.1.1 This Water Resources and Flood Risk Chapter of the Environmental Impact Assessment (EIA) Report presents the results of the assessment of the likely significant effects on onshore water resources and flood risk that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Project landward of Mean Low Water Springs (MLWS). It should be read in conjunction with the project description provided in **Volume 1, Chapter 4: Project Description** and the relevant parts of the following chapters and appendices:

- **Chapter 6: Marine Geology, Oceanography and Physical Processes**: Changes to marine processes physical parameters may also result in potential changes to coastal flood risk. Therefore, information from this assessment will inform the water resources and Flood Risk Assessment (FRA).
- **Chapter 7: Marine Water and Sediment Quality**: This chapter addresses potential impacts on marine water and sediment quality from offshore activities towards marine receptors, seaward of the Mean High Water Springs. The marine water and sediment quality assessment also addresses potential impacts on coastal Water Framework Directive (WFD) water bodies, which is considered within a standalone WFD assessment in **Volume 3, Appendix 6.2: Water Framework Directive Assessment**.
- **Chapter 19: Ground Conditions and Contamination:** The water resources and flood risk chapter addresses the net impact on water quality caused by the mobilisation of historical contamination and the significance of the introduction of new contaminants. Therefore, the ground conditions and contamination chapter will be used to inform the water resources and FRA.
- **Chapter 23: Terrestrial Ecology and Ornithology**: The terrestrial ecology and ornithology assessment addresses potential impacts on designated sites. It is informed by the conclusions of the assessment on the water environment which supports these sites.
- **Chapter 28: Climate Resilience:** The interface between climate resilience with water resources and flood risk is captured in the In-Combination Climate Impacts assessment.

20.1.1.2 This Chapter describes:

- the legislation, planning policy, guidance and other documentation that has informed the assessment (**Section 20.2: Relevant legislative and policy context**);
- the outcome of consultation and engagement that has been undertaken to date, including how matters relating to water resources and flood risk have been addressed (**Section 20.3: Consultation and engagement**);
- the scope of the assessment for water resources and flood risk (**Section 20.4: Scope of the assessment);**
- the data sources and methods used for gathering baseline data including surveys where appropriate (**Section 20.5: Methodology for baseline data gathering**);
- the overall environmental baseline (**Section 20.6: Baseline conditions**);
- the basis for the EIA Report (**Section 20.7: Basis for EIA Report**);
- the methodology for the EIA Report (**Section 20.8: Methodology for EIA Report);**

- the assessment of water resources and flood risk effects (**Section 20.9: Assessment of effects: Construction stage; Section 20.10: Assessment of effects: Operation and Maintenance stage; Section 20.11: Assessment of effects: Decommissioning stage**);
- a summary of residual effects for water resources and flood risk (**Section 20.12 ; Summary of effects**); consideration of transboundary effects (**Section 20.13: Transboundary effects**);
- consideration of inter-related effects and cumulative effects (**Section 20.14: Inter-related effects** and **Section 20.15: cumulative effects assessment**);
- a summary of residual likely significant effects is provided for water resources and flood risk (**Section 20.16: Summary of likely residual effects);**
- a reference list is provided (**Section 20.17: References)**; and
- a glossary of terms and abbreviations is provided (**Section 20.18: Glossary and Abbreviations).**

20.1.1.3 This Chapter is also supported by the following appendices in **Volume 3**:

- **Appendix 6.2: Water Framework Directive Assessment;**
- **Appendix 20.1: Detailed Hydrological and Hydrogeological Baseline Report**; and
- **Appendix 20.2: Flood Risk Assessment.**

20.1.1.4 This Chapter is also supported by the following implementation plans and other documents in **Volume 4**:

- **Outline Construction Environmental Management Plan (CEMP)**; and
- **Outline Operational Drainage Management Strategy** for the onshore substations during operation.

20.2 Relevant legislative and policy context and technical guidance

20.2.1 Legislative and policy context

20.2.1.1 This Section identifies the relevant legislation and policy context that has informed the scope of the water resources and FRA. Further information on policies relevant to the EIA and their status is set out in **Chapter 2: Legislative and Policy Context**, which provides an overview of the relevant legislative and policy context for the Project. **Chapter 2: Legislative and Policy Context** is supported by **Volume 3, Appendix 2.1: Planning Policy Framework**, which provides a detailed summary of international, national, marine and local planning policies of relevance to the EIA. Individual policies of specific relevance to this assessment and associated appendices have been taken into account.

20.2.1.2 This summary provides a foundation for understanding the specific requirements that this Chapter must address in terms of assessing and mitigating impacts on receptors and relevant environmental issues.

20.2.1.3 The legislation and policy relevant to water resources and flood risk have been listed by their overall topic and order of relevance, and includes the following:

Legislation

- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 (Scottish Government, 2017a);
- The Water Environment (Controlled Activities) (Scotland) Regulations (2011) (Scottish Government, 2011);
- Flood Risk Management (Scotland) Act (2009) (Scottish Government, 2009);
- The Private Water Supplies (Scotland) Regulations 2006 (Scottish Government, 2006);
- Water Environment and Water Services (Scotland) Act 2003 (Scottish Government, 2003);
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (European Commission, 2000); and
- Environmental Protection Act (1990) (Scottish Government, 1990).

Policy

- National Planning Framework 4 (Scottish Government, 2023a);
- Aberdeenshire Council Local Development Plan 2023 (Aberdeenshire Council, 2023a);
- Scottish Environment Protection Agency's (SEPA's) Position Statement on Planning and Soils (SEPA, 2022a);
- SEPA's Position Statement on Land Protection (SEPA, 2022b);
- Aberdeenshire Council Strategic Flood Risk Assessment (Aberdeenshire Council, 2020);
- Planning Advice Note 33: Development of contaminated land (Scottish Government, 2017b);
- Scotland's National Marine Plan (Scottish Government, 2015); and
- SEPA Policy No. 19, Groundwater protection policy for Scotland (SEPA, 2003).

20.2.2 Relevant technical guidance

20.2.2.1 Other information and technical guidance relevant to the assessment undertaken for water resources and flood risk topics include the following:

- Climate Change allowances for flood risk assessment in land use planning, version 6 (SEPA, 2025a);
- Guidance on Assessing the Impacts of Development on Groundwater Abstractions (SEPA, 2025b);
- Guidance on Assessing the Impacts of Development on Groundwater Dependent Terrestrial Ecosystems (GWDTE) (SEPA, 2025c);
- Flood Risk Standing Advice for Planning Authorities (SEPA, 2024a);

- Flood Risk and Land Use Vulnerability Guidance (SEPA, 2018; 2024b);
- Technical Flood Risk Guidance for Stakeholders - SEPA requirements for undertaking a FRA (SEPA, 2022c);
- Climate Change allowances for flood risk assessment in land use planning, version 2 (SEPA, 2022d);
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) A Practical Guide (SEPA, 2024c);
- Guidance for Pollution Prevention (GPP) documents (NetRegs, 2020);
- C753 The Sustainable Drainage Systems (SuDS) Manual (Construction Industry Research and Information Association (CIRIA), 2015);
- Culverting of Watercourses – Position Statement and Supporting Guidance (SEPA, 2011);
- Engineering in the water environment: good practice guide, River crossings (SEPA, 2010);
- Engineering in the Water Environment Good Practice Guide, Temporary Construction Methods (SEPA, 2009);
- Engineering in the Water Environment, Good Practice Guide - Bank Protection Rivers and Lochs (SEPA, 2008); and
- C532 Control of Water Pollution from Construction Sites (CIRIA, 2001).

20.3 Consultation and engagement

20.3.1 Overview

20.3.1.1 This Section describes the consultation and stakeholder engagement undertaken on the Project in relation to water resources and flood risk. This includes early engagement, the outcome of and response to the Scoping Opinion (Onshore Scoping Opinion (Aberdeenshire Council, 2023b) and Offshore Scoping Opinion (Scottish Government, 2023b)) in relation to the water resources and FRA, non-statutory consultation and the findings of the Project's Statutory Consultation. An overview of engagement undertaken for the Project as a whole can be found in Section 5.5 of **Chapter 5: Approach to the EIA**.

20.3.2 Key issues

20.3.2.1 A summary of the key issues raised during statutory and non-statutory consultation, specific to water resources and flood risk, is outlined below in **Table 20.1**, together with how these issues have been considered in the production of this EIA Report.

Table 20.1 Stakeholder issues responses – water resources and flood risk

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
SEPA	145	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*1. Site layout* *1.1 All maps must be based on an adequate scale with which to assess the information. This could range from Ordnance Survey (OS) 1: 10,000 to a more detailed scale in more sensitive locations. Each of the maps below must detail all proposed upgraded, temporary and permanent site infrastructure. This includes all tracks, excavations, buildings, borrow pits, pipelines, cabling, site compounds, laydown areas, storage areas and any other built elements. Existing built infrastructure must be re-used or upgraded wherever possible. The layout should be designed to minimise the extent of new works on previously undisturbed ground. For example, a layout which makes use of lots of spurs or loops is unlikely to be acceptable. Cabling must be laid in ground already disturbed such as verges. A comparison of the environmental effects of alternative locations of infrastructure elements, such as tracks, may be required.*"	A range of figures are presented along with this Chapter and its accompanying appendices at the appropriate scale. This includes; • **Volume 2, Figure 20.1**: **WFD Surface Water Bodies and Wetlands**; • **Volume 2, Figure 20.2: WFD; Groundwater Bodies,** • **Volume 3, Appendix 20.1** and its associated figures: ‣ Figure 1: Water Resources (Private Water Supplies (PWS), Controlled Activity Regulations (CAR) abstractions and Drinking Water Protection Area (DWPA)); ‣ Figure 2: Potential GWDTE and Bedrock Geology; ‣ Figure 3: Potential GWDTE and Superficial Geology; and ‣ Figure 4: GWDTE and Indicators. The site layout has been designed to avoid impacts on the water environment via the implementation of trenchless crossings and standoff distances which are secured by embedded environmental measures set out in **Section 20.7** of this Chapter.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
SEPA	146	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*2.1 The site layout must be designed to avoid impacts upon the water environment. Where activities such as watercourse crossings, watercourse diversions or other engineering activities in or impacting on the water environment cannot be avoided then the submission must include justification of this and a map showing:* *a) All proposed temporary or permanent infrastructure overlain with all lochs and watercourses.* *b) A minimum buffer of 50m around each loch or watercourse. If this minimum buffer cannot be achieved each breach must be numbered on a plan with an associated photograph of the location, dimensions of the loch or watercourse and drawings of what is proposed in terms of engineering works.* *c) Detailed layout of all proposed mitigation including all cut off drains, location, number and size of settlement ponds.*"	
SEPA	147	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*2.2 If water abstractions or dewatering are proposed, a table of volumes and timings of groundwater abstractions and related mitigation measures must be provided.*"	No water abstractions are being proposed as part of the Project. Based on available baseline information about hydrogeology set out in **Section 20.6** there is unlikely to be much interaction with groundwater from the Project. Any potential dewatering would be minimised during construction via the implementation of the embedded environmental measures set out in **Section 20.7** and as assessed in **Section 20.9 to 20.11.**
SEPA	148	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*2.3 Further advice and our best practice guidance are available within the water engineering section of our website. Guidance on the design of water crossings can be found in our Construction of River Crossings Good Practice Guide.*"	This best practice guidance is referenced in **Section 20.2** and the principles are captured within the embedded environmental measures within **Section 20.7**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
SEPA	149	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*2.4 Refer to our flood risk Standing Advice for advice on flood risk. Watercourse crossings must be designed to accommodate the 0.5% Annual Exceedance Probability (AEP) flows, or information provided to justify smaller structures. If it is thought that the development could result in an increased risk of flooding to a nearby receptor then a FRA must be submitted in support of the planning application. Our Technical flood risk guidance for stakeholders outlines the information we require to be submitted as part of a FRA. Please also refer to CAR Flood Risk Standing Advice for Engineering, Discharge and Impoundment Activities.*"	This advice and technical guidance have been taken into account within **Volume 3, Appendix 20.2** and incorporated into relevant embedded environmental measures on watercourse crossings as set out in **Section 20.7** of this Chapter.
SEPA	157	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*4. Disruption to GWDTEs.* *4.1 GWDTEs are protected under the Water Framework Directive and therefore the layout and design of the development must avoid impact on such areas. The following information must be included in the submission:* *a) A map demonstrating that all GWDTEs are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the site boundary where the distances require it.* *b) If the minimum buffers above cannot be achieved, a detailed site specific qualitative and / or quantitative risk assessment will be required. We are likely to seek conditions securing appropriate mitigation for all GWDTEs affected.*"	**Volume 3, Appendix 20.1** provides an evaluation of potential groundwater dependency for potential GWDTEs within the study area. Only two potential GWDTEs are screened in for further assessment as part of a precautionary approach. Within the assessment (**Section 20.9**) it is concluded that there would be negligible impact upon these habitat parcels as a result of the design which includes for trenchless crossings at those locations along with other embedded environmental measures (set out in **Section 20.7**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
SEPA	158, 160	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*4.2 Please refer to Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and GWDTE for further advice and the minimum information we require to be submitted.* *5.2 Please refer to Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and GWDTE for further advice on the minimum information we require to be submitted.*"	This guidance has been referenced in **Section 20.2** of this Chapter and used to inform the information provided in **Volume 3, Appendix 20.1** and the assessment of potential effects carried out within **Sections 20.9** to **20.11** of this Chapter.
SEPA	159	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*5. Existing groundwater abstractions.* *5.1 Excavations and other construction works can disrupt groundwater flow and impact on existing groundwater abstractions. The submission must include:* *a) A map demonstrating that all existing groundwater abstractions are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the site boundary where the distances require it.* *b) If the minimum buffers above cannot be achieved, a detailed site specific qualitative and / or quantitative risk assessment will be required. We are likely to seek conditions securing appropriate mitigation for all existing groundwater abstractions affected.*"	**Volume 3, Appendix 20.1** is accompanied by Figure 1 which maps out potential groundwater abstractions in accordance with these requirements. Several embedded environmental measures have also been put forward in **Section 20.7** and incorporated into the assessment to ensure the suitable protection of groundwater abstractions. This includes M-129 and M-137 which set out measures such as the provision of an alternative supply, monitoring and / or further assessment at several properties where required.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
SEPA	163	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*7. Pollution prevention and environmental management. 7.1 One of our key interests in relation to developments is pollution prevention measures during the periods of construction, operation, maintenance, demolition and restoration.*"	Numerous embedded environmental measures have been put forward within **Section 20.7** of this Chapter and **Volume 4: Outline CEMP** and **Volume 4: Operational Drainage Management Strategy** for the purpose of pollution prevention during each stage of the Project.
SEPA	164	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*7.2 A schedule of mitigation supported by the above site specific maps and plans must be submitted. These must include reference to best practice pollution prevention and construction techniques (for example, limiting the maximum area to be stripped of soils at any one time) and regulatory requirements. They should set out the daily responsibilities of ECOWs, how site inspections will be recorded and acted upon and proposals for a planning monitoring enforcement officer. Please refer to Guidance for Pollution Prevention (GPPs).*"	
Aberdeenshire Council	42	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*A map demonstrating all GWDTEs are outwith a 100m radius (<1m excavation depth) and 250m (>1m excavation depth) should be included within an EIA Report. If the minimum buffers cannot be achieved, a risk assessment will also be required.*"	**Volume 3, Appendix 20.1** is accompanied by Figures 2 to 4 which maps out potential GWDTEs. **Volume 3, Appendix 20.1** also demonstrates that there is only two potential GWDTEs which have some degree of groundwater dependency. As reported in **Section 20.9** of this Chapter there is unlikely to be any significant impact upon these habitats due to the siting of trenchless crossings and the inclusion of other embedded environmental measures.
Aberdeenshire Council	51	20 February 2023 Scoping Opinion	"*The baseline conditions for the scoping site area are noted. The Council raises no concerns relating to these.*"	Comments welcomed and noted.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
		(Aberdeenshire Council, 2023b).		
Aberdeenshire Council	52	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*Table 6.3.8 Makes it clear how embedded environmental measures are to be secured.*"	
Aberdeenshire Council	53	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*The Council agrees with the approaches indicated and does not suggest any topics be altered. The justifications given to scoping out impacts (paragraphs 6.3.75 to 6.3.80 inclusive) are noted and accepted.*"	
Aberdeenshire Council	54	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*The Council's Flood Risk and Coast Protection (FRCP) service were consulted as part of the scoping exercise. Their comments are basic owing the large scoping area, with no specific flood risk advice given on specific locations. However, the FRCP note from the scoping report that detailed consideration is to be given to flood risk and coastal impacts within an EIA Report. Information regarding the cable landing site and onshore burial and watercourse crossing methodology should be included within the EIA Report.*"	Further consultation was undertaken with the FRCP service in June 2025, which is documented in **Volume 3, Appendix 20.2** along with the relevant construction methodology information.
Aberdeenshire Council	55	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	"*Contact with the FRCP service is suggested for detailed and specific advice is encouraged once landfall, cable route and substation locations have been finalised.*"	
Aberdeenshire Council	56	20 February 2023 Scoping	"*SEPA, in their response, suggest if water abstractions or dewatering are proposed, a table of volumes and*	No water abstractions are being proposed as part of the Project. Based on available baseline

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
		Opinion (Aberdeenshire Council, 2023b).	*timings, along with mitigation measures should be provided within an EIA Report. Links to flood risk guidance and guidance regarding watercourse crossings are included within the response document for ease.*”	information regarding hydrogeology set out in **Section 20.6** there is unlikely to be much interaction with groundwater from the Project. Any potential dewatering would be minimised during construction via the implementation of the embedded environmental measures set out in **Section 20.7** and as assessed in **Sections 20.9** to **20.11**.
Aberdeenshire Council	57	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*In terms of existing groundwater abstractions, construction works can affect groundwater flow*.”	The guidance relating to groundwater abstractions has been referenced in **Section 20.2** of this Chapter and used to inform the information provided in **Volume 3, Appendix 20.1**. A pre-application meeting was also held with SEPA and Aberdeenshire Council on 21 November 2024. The guidance and engagement has informed the assessment of potential effects on abstractions carried out within **Section 20.9** of this Chapter.
Aberdeenshire Council	58	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*An EIA Report should include a map demonstrating all existing groundwater abstractions are outwith a radius of 250m for abstractions >1m in depth. A site specific qualitative and / or quantitative risk assessment will be required if minimum buffer distances cannot be achieved*.”	
Aberdeenshire Council	59	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*Guidance relating to groundwater abstractions can be found in the SEPA response*.”	
Aberdeenshire Council	60	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*The Council recommends engaging in discussions with SEPA regarding potential impacts, buffer zones and any mitigation requirements at an early stage to assist with assessments and production of an EIA Report*.”	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Aberdeenshire Council	61	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*Scottish Water notes that there is ‘live infrastructure’ within the scoping site boundary, with the potential to be impacted by the Project. As is recognised within the scoping report, there is a drinking water protection area (DWPA). Risks to drinking water is considered by Scottish Water to be low, however any mitigation measures to protect the DWPA should be included within an EIA Report*.”	Embedded environmental measures have been put forward in **Section 20.7** for the protection of these Scottish Water assets.
Aberdeenshire Council	183	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*As there is a significant area within the onshore scoping boundary, it is difficult at this stage to give location specific flood risk advice*.”	Noted, flood risk advice has been sought and SEPA technical guidance followed during the completion of **Volume 3, Appendix 20.2**. Within this Chapter **Section 20.9** also includes further information on construction methodologies.
Aberdeenshire Council	184	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*However, from reviewing the Scoping Report, it would appear that detailed consideration will be given to flood risk and coastal impacts within the EIA.”*	
Aberdeenshire Council	185	20 February 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	“*Information on the potential cable landing site and onshore burial & watercourse crossing methodology (e.g. trenching or directional drilling) within the EIA would be welcomed*.”	
Aberdeenshire Council	887	19 December 2024 Pre Application Report (Aberdeenshire Council, 2024).	“*Impact on Private Water Supplies* *Environmental Health* *The applicant should identify any private water supplies potentially affected by the development and ensure necessary control measures are implemented to prevent contamination. To request details / information regarding*	The Applicant submitted a freedom of information request in May 2022 and August 2022 to obtain information on PWS from Aberdeenshire Council. The data received has been used along with this stakeholder comment and follow up

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			PWSs, the applicant should submit a freedom of information request. *SEPA* *Please refer to the above section for information requirements with regards PWS. Please also refer to the updated SEPA Guidance on Assessing the Impacts of Development on Groundwater Abstractions, dated August 2024, (attached) SEPA welcome that the applicant has begun PWS investigations. SEPA confirms its GIS shows the following PWS exist in or adjacent to refined cable corridor routes and substation sites:* • *PWS Ref ABS00324 (Lunderton) - Ground source;* • *PWS Ref ABS20179 (Roundhillock New House) - source unknown;* • *PWS Ref ABS22660 (Parkhill Cottage) - source unknown;* • *PWS Ref ABS00018 (Cocklaw) - Ground Source; and* • *PWS Ref ABS20167 (Birchdale) - Ground Source.* *SEPA confirm that if it is demonstrated no excavation will take place within the relevant buffer zones highlighted in SEPA Guidance, a detailed PWS risk assessment is unlikely to be requested.*"	questionnaires to PWS users to help inform baseline findings in **Volume 3, Appendix 20.1**. An assessment of potential effects on PWS has been carried out within **Section 20.9** to **20.11** of this Chapter.
Aberdeenshire Council	894	19 December 2024 Pre Application Report	*"Flood Risk and Coast Protection* *We note that no detailed drawings regarding the site layouts and associated infrastructure along with full drainage details have been provided as part of this application. We therefore can only provide high-level*	**Volume 3, Appendix 20.2** has been provided in accordance with SEPA's technical guidance and following consultation with Aberdeenshire Council in June 2025.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
		(Aberdeenshire Council, 2024).	*guidance at this point and have the following comments with regards surface water drainage and associated flood risk at the locations of any future proposed infrastructure (not the entire Proposal of Application Notice Boundary):* 1. *A Drainage Impact Assessment, prepared in accordance with Council Guidelines would be required. This should cover all potential phases of the application;* 2. *If surface water soakaways are to be used to disperse of surface water; testing and sizing calculations should be done by a suitably competent person and in accordance with BRE Digest 365 or Ciria Project Report 23. Consideration should also be made to the location of the soakaways to ensure a minimum distance of 5m from any building foundations or 3. If infiltration testing proves that ground is impervious then suitable attenuation calculations should be provided to prove that on-site surface water drainage system has adequate storage capacity for a 30 year return period rainfall event. Prior to a controlled discharge into either an available watercourse or public sewer (to be agreed with Scottish Water), controlled as a minimum to the pre-development runoff rate. As such, the pre-development runoff rate should be confirmed and a reduction made for any areas not included in the drainage design i.e. areas within the site application boundary that are to be left undeveloped;*	**Volume 4: Outline Operational Drainage Management Strategy** for the onshore substations has also been produced in accordance with this pre application advice. This includes an outline design plan showing the proposed drainage network and required SuDS. This provides a basis for the implementation of a detailed design plan post consent, A final iteration of the Operational Drainage Management Strategy will be produced at the post-consent stage.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			3. *Soakaway or Attenuation System construction details should be provided (including discharge control if necessary);* 4. *A statement on how future maintenance of the proposed drainage system will be performed and confirmation of who will be responsible;* 5. *Confirmation that any existing site or field drainage will be located and suitably altered, if indeed disturbed;* 6. *All calculations must be approved and certified by a suitably qualified person;* 7. *To fully consider flood risk to the site the applicant will need to submit a FRA which must consider flood risk from all sources. This is to be undertaken in accordance with the current version of SEPAs 'Technical Flood Risk Guidance for Stakeholders – SEPA requirements for undertaking a FRA;* 8. *We suggest that SEPA be consulted as part of the production of any FRA and DIA associated with the proposal.* *SEPA* *For advice on flood risk please refer to SEPAs Flood Risk Standing Advice (https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fhbghpr1p%2Fflood-risk-standing-advice.docx&wdOrigin=BROWSELINK) and reference should also be made to CAR Flood Risk Standing Advice for Engineering, Discharge and Impoundment Activities (https://www.sepa.org.uk/media/94134/car-flood-risk-standing-advice-for-engineering-discharge-and-impoundment-activities.pdf).*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			Any watercourse crossings must be designed to accommodate the 0.5% annual exceedance probability flows (with an appropriate allowance for climate change), or information provided to justify smaller structures. *If it is considered the development could result in an increased risk of flooding to a nearby receptor, then a FRA must be submitted. SEPAs Technical Flood Risk Guidance for Stakeholders (https://www.sepa.org.uk/media/162602/ss-nfr-p-002-technical-flood-risk-guidance-for-stakeholders.pdf) outlines the information requirements to be submitted in an FRA.* *It should be noted that a condition restricting infrastructure (temporary or permanent), landraising and / or storage of materials within a Future Flood extent may be attached to any future planning consent."*	
Aberdeenshire Council	895	19 December 2024 Pre Application Report (Aberdeenshire Council, 2024).	*"Groundwater Dependant Terrestrial Ecosystem* *SEPA* *GWDTEs are protected under the Water Framework Directive. Excavations and other construction works can disrupt groundwater flow and impact on GWDTEs and existing groundwater abstractions. The layout and design of the development must avoid impacts on such areas.* *A National Vegetation Classification (NVC) survey should be submitted which includes the following information:*	**Volume 3, Appendix 20.1** is accompanied by Figures 2 to 4 which maps out potential GWDTEs. **Volume 3, Appendix 20.1** also demonstrates that there is only two potential GWDTEs which have some degree of groundwater dependency. As reported in **Section 20.9** of this Chapter there is unlikely to be any significant impact upon these habitats due to the siting of trenchless crossings and inclusion of other embedded environmental measures.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			a) A set of drawings demonstrating all GWDTEs and existing groundwater abstractions are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. The survey needs to extend beyond the site boundary where the distances require it. *b) If the minimum buffers cannot be achieved, a detailed site specific qualitative and / or quantitative risk assessment will be required. Please refer to the updated SEPA Guidance on Assessing the Impacts of Development on Groundwater Water Dependent Terrestrial Ecosystems, dated August 2024, attached, and the minimum information requirements that need to be submitted.* *Please note that due to discrepancies in habitat definition and ambiguity in correspondence with NVC types we do not accept the use of The UK Habitat Classification System (UKHab) as an alternative to NVC.* *In addition, the Water Framework Directive protects all types of wetlands and the Scottish Wetland Inventory should be checked and impacts on any wetland considered. For example, the Red Line Boundary is adjacent to or includes wetlands at NK 06860 42280, NK 06435 48903, NK 07403 49911, NK10762 49185, NK 10390 51951 (please note this is for illustrative purposes and not a complete list).* *As stated in the meeting, SEPA request the cumulative impact of this and other similar infrastructure projects in the area (landfall, cable routes and substation areas) is considered in the EIA Report particularly in respect to impacts to GWDTEs and other wetlands."*	The Scottish Wetland Inventory has been checked and those potential receptors have been considered within **Volume 3, Appendix 20.1** and **Sections 20.9** to **20.11.** A cumulative effects assessment is also provided in **Chapter 33: Cumulative Effects Assessment**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Aberdeenshire Council	896	19 December 2024 Pre Application Report (Aberdeenshire Council, 2024).	*"Protection of the Water Environment* *SEPA* *The proposals should demonstrate how impacts on local hydrology have been minimised and the site layout designed to minimise watercourse crossings and avoid other direct impacts on water features. Measures should be put in place to protect any downstream sensitive receptors.* *The submission must include a set of drawings showing:* *a) All proposed temporary or permanent infrastructure overlain with all lochs and watercourses;* *b) A suitable buffer around each loch or watercourse. Recommended buffers can be viewed on website (https://map.environment.gov.scot/sewebmap/?layers=recommendedRiparianCorridor) (the geomorphic risk (https://map.environment.gov.scot/sewebmap/?layers=geomorphicRiskBuffer) associated with certain stretches of the River Ugie should also be noted in terms of long term viability of any infrastructure at that location).* *Further advice and best practice guidance are available within the water engineering section of SEPAs website (https://www.sepa.org.uk/regulations/water/engineering/). Guidance on the design of water crossings can be found in SEPAs Construction of River Crossings Good Practice Guide (https://www.sepa.org.uk/media/151036/wat-sg-25.pdf)."*	A range of figures are presented along with this Chapter and its accompanying appendices. This includes **Volume 2, Figure 20.1**, **Volume 2**, **Figure 20.2** and **Volume 3, Appendix 20.1** Figures 1 to 4. The site layout has been designed to minimise watercourse crossings and potential impacts on the water environment via the implementation of trenchless crossings and standoff distances. These types of mitigation are secured by embedded environmental measures set out in **Section 20.7** of this Chapter.
Aberdeenshire Council	900	19 December 2024 Pre Application Report	*"General advice from SEPA* *To avoid delay and potential objection any future submission must contain a series of scale drawings of*	**Volume 3, Appendix 20.1** is accompanied by Figures 2 to 4 which maps out potential GWDTEs. **Volume 3, Appendix 20.1** also demonstrates that there is only two potential

<table>
<tr><th>Stakeholder</th><th>Stakeholder issue ID</th><th>Date, document, forum</th><th>Stakeholder comment</th><th>How is this addressed in the EIA Report</th></tr>
<tr><td></td><td></td><td>(Aberdeenshire Council, 2024).</td><td>sensitivities, for example peat depth, peat condition, GWDTEs, proximity to watercourses, overlain with proposed development. This is necessary to ensure the assessment process has informed the layout of the development to firstly avoid, then reduce and then mitigate significant impacts on the environment.

Each of the drawings requested above must detail all proposed upgraded, temporary and permanent infrastructure. This includes all tracks, excavations, buildings, cabling, site compounds, laydown areas, storage areas and any other built elements. All drawings must be based on an adequate scale with which to assess the information.

The layout should be designed to minimise the extent of new works on previously undisturbed ground.

A comparison of the environmental effects of alternative locations of infrastructure elements may be required.”</td><td>GWDTEs which have some degree of groundwater dependency. As reported in Section 20.9 of this Chapter there is unlikely to be any significant impact upon these habitats due to the siting of trenchless crossings and inclusion of other embedded environmental measures.</td></tr>
<tr><td>Scottish Water</td><td>169</td><td>22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).</td><td>“Audit of Proposal:
Scottish Water has no objection to this planning application; however, the applicant should be aware that this does not confirm that the proposed development can currently be serviced. Please read the following carefully as there may be further action required. Scottish Water would advise the following:”</td><td rowspan="2">These comments are acknowledged and have been taken into account during the design of the Project.

Scottish Water was contacted on 18 January 2025 and responded in April 2025.

Embedded environmental measures have also been put forward in Section 20.7 for the protection of these Scottish Water assets.</td></tr>
<tr><td>Scottish Water</td><td>170</td><td>22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).</td><td>“Asset Impact Assessment:
Scottish Water records indicate that there is live infrastructure in the proximity of your development area that may impact on existing Scottish Water assets."</td></tr>
</table>

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Scottish Water	171	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	*"The applicant must identify any potential conflicts with Scottish Water assets and contact our Asset Impact Team via our Customer Portal for an appraisal of the proposals."*	
Scottish Water	172	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	*"The applicant should be aware that any conflict with assets identified will be subject to restrictions on proximity of construction. Please note the disclaimer at the end of this response."*	
Scottish Water	173	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	*"Written permission must be obtained before any works are started within the area of our apparatus."*	
Scottish Water	174, 557	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b). 12 May 2023 MD-LOT Scoping Opinion.	*"Drinking Water Protected Areas A review of our records indicates that the proposed activity falls partly within a drinking water catchment where a Scottish Water abstraction is located. Scottish Water abstractions are designated as DWPAs under Article 7 of the Water Framework Directive. The Ugie River supplies Forehill Water Treatment Works (WTW) and it is essential that water quality and water quantity in the area are protected. In the event of an incident occurring that could affect Scottish Water we should be notified immediately using the Customer Helpline number 0800 0778 778."*	Embedded environmental measures are identified in **Section 20.7** for the protection of the River Ugie DWPA. It has been documented in the EIA that the Project is situated within the DWPA. It is concluded in the assessment of effects within **Section 20.9** to **20.11** that on the basis of the implementation of embedded environmental measures there will be no significant effects on the public water supply.
Scottish Water	175, 558	22 March 2023 Scoping Opinion; 12 May 2023 MD-LOT Scoping Opinion	*"The proposed site drains into the Ugie River approximately 9.5km of the Forehill river abstraction. In view of the distances involved the risk is likely to be low. However, the normal precautions will be required for mitigation, and we should add that we should be notified*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
		(Scottish Government, 2023).	*of any pollution incidents that impact surface water drainage in the catchment as detailed above."*	
Scottish Water	176, 559	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"Scottish Water have produced a list of precautions for a range of activities. This details protection measures to be taken within a DWPA, the wider drinking water catchment and if there are assets in the area. Please note that site specific risks and mitigation measures will require to be assessed and implemented. These documents and other supporting information can be found on the activities within our catchments page of our website at www.scottishwater.co.uk/slm"*	
Scottish Water	177, 560	22 March 2023 Scoping Opinion(Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"We welcome receipt of this notification about the proposed activity within a drinking water catchment where a Scottish Water abstraction is located."*	
Scottish Water	178, 561	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT	*"The fact that this area is located within a drinking water catchment should be noted in documentation. Also, anyone working on site should be made aware of this during site inductions and we would also like to take the opportunity, to request that 3 in advance of any works commencing on site, Scottish Water is notified at*	

Stakeholder	**Stakeholder issue ID**	**Date, document, forum**	**Stakeholder comment**	**How is this addressed in the EIA Report**
		Scoping Opinion (Scottish Government, 2023).	*protectdwsources@scottishwater.co.uk so we can make our operational teams aware there will be activity taking place in the catchment."*	
Scottish Water	179, 562	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"Surface Water For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system."*	**Volume 4: Outline Operational Drainage Management Strategy** has been produced for the Project and this contains high level information on future foul connections which will be further investigated with Scottish Water as part of the detailed design stage. Scottish Water was consulted on 14 January 2025 and responded in April 2025. Information on existing assets has been taken into account when considering constraints for the indicative SuDS Plan which accompanies **Volume 4: Outline Operational Drainage Management Plan**.
Scottish Water	180; 563	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"There may be limited exceptional circumstances where we would allow such a connection for brownfield sites only, however this will require significant justification from the customer taking account of various factors including legal, physical, and technical challenges."*	
Scottish Water	181, 564	22 March 2023 Scoping Opinion	*"In order to avoid costs and delays where a surface water discharge to our combined sewer system is*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
		(Aberdeenshire Council, 2023b); 12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*anticipated, the developer should contact Scottish Water at the earliest opportunity with strong evidence to support the intended drainage plan prior to making a connection request. We will assess this evidence in a robust manner and provide a decision that reflects the best option from environmental and customer perspectives."*	
Scottish Water	182	22 March 2023 Scoping Opinion (Aberdeenshire Council, 2023b).	*"General notes: - Scottish Water asset plans can be obtained from our appointed asset plan providers: - Site Investigation Services (UK) Ltd - Email: sw@sisplan.co.uk - www.sisplan.co.uk."*	
Scottish Water	556	12 May 2023 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"Scottish Water records indicate that there is live infrastructure in the proximity of your development area that may impact on existing Scottish Water assets. The applicant must identify any potential conflicts with Scottish Water assets and contact our Asset Impact Team via our Customer Portal for an appraisal of the proposals. The applicant should be aware that any conflict with assets identified will be subject to restrictions on proximity of construction. Please note the disclaimer at the end of this response. Written permission must be obtained before any works are started within the area of our apparatus."*	
Marine Directorate Licensing	372	12 May 2023 MD-LOT Scoping Opinion (Scottish	*"The Scottish Ministers confirm that there is live infrastructure in the proximity of the development area that may impact existing Scottish Water assets. The Scottish Ministers confirm that the Developer must*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Operations Team		Government, 2023).	*identify any potential conflicts with Scottish Water assets and consult with the Scottish Water Asset Impact Team. Written permission must be obtained before any works are started and the Developer should be aware that any conflict with assets identified will be subject to restrictions on the proximity of construction.”*	

20.4 Scope of the assessment

20.4.1 Overview

20.4.1.1 This Section sets out the scope of the EIA for water resources and flood risk. This scope has been developed as the Project's design has evolved and responds to stakeholder feedback received to-date, as set out in **Section 20.3**.

20.4.2 Spatial scope and study area

20.4.2.1 The spatial scope of the water resources and FRA is defined as the extent of the WFD surface waterbody sub-catchments (river and transitional) intersected by the Onshore Red Line Boundary. The sub-catchments of these surface water bodies have been delineated based upon the topography within the main river catchment divides. It is assumed that the groundwater flow regime is broadly compliant with the same topographical boundaries as the surface water, and that both surface water and groundwater therefore share the same catchment areas. This approach has formed the basis of the study area described in this Section, and can be seen in **Volume 2, Figure 20.1**.

20.4.3 Temporal scope

20.4.3.1 The temporal scope of the assessment of water resources and flood risk is the entire lifetime of the Project, which therefore covers the construction, O&M and decommissioning stages as set out in **Chapter 4: Project Description**. In summary:

- The overall duration of construction of the offshore infrastructure is anticipated to be up to 12 years. A shorter period within the 12 years is expected for construction of the onshore infrastructure, in the range of up to 9 years.
- It is anticipated that the construction of the Project will commence in 2030, with the first phase becoming fully operational by 2037. It is anticipated that the second phase of the Project would become fully operational by 2040 and the third phase by 2043. The operational lifetime of the Project for each phase is expected to be 35 years.
- The decommissioning stage will commence at the end of the operational lifetime of the Project. The decommissioning duration of the onshore infrastructure may take the same amount of time as construction of the Project, up to nine years, although this indicative timing may reduce. Materials would be reused or recycled, where possible, with the remainder of any material to be disposed with a licenced waste disposal site.

20.4.4 Identified receptors

20.4.4.1 The spatial and temporal scope of the assessment enables the identification of receptors that may experience a change as a result of the Project. The receptors identified that may experience likely significantly effects for water resources and flood risk are outlined in **Table 20.2**.

Table 20.2 Identified receptors requiring assessment for water resources and flood risk

Receptor group	Receptors included within group
WFD groundwater bodies	Peterhead (Waterbody ID: 150630). Mintlaw (Waterbody ID: 150655). Fraserburgh (Waterbody ID: 150634). Fraserburgh Sand and Gravel (Waterbody ID: 150800).
WFD surface water bodies	<u>River Ugie Catchment</u> River Ugie – North / South confluence (confl) to tidal limit (Waterbody ID: 23215). Faichfield Burn (Waterbody ID: 23217).
	<u>WFD Buchan Coastal River water body catchment</u> Black Water downstream (d/s) of St Fergus (Waterbody ID: 23062).
WFD transitional water bodies	Ugie Estuary (Waterbody ID: 200129).
Conservation sites	None identified within study area.
Wetlands	NK 10754 52759 SD17 Dune Slacks. NK 11518 49754 S28 Swamp. NK 11704 50093 S19 Swamp. NK 11360 49142 S28 Swamp. NK 10390 51951 Non-specified wetland. NK 10762 49185 Non-specified wetland.
GWDTEs	Two potential GWDTEs have been screened in for further assessment (See **Volume 3, Appendix 20.1** for further details). Both comprised of MG10 Holcus lanatus - Juncus effusus rush-pasture NVC types.
Water resources (Public Water Supplies)	Surface Water DWPA – River Ugie and associated Scottish Water abstraction serving the Forehill Water Treatment Works. The entirety of the Scotland River Basin District (RBD) is designated as a groundwater DWPA.
Water resources (CAR abstractions)	1 Hallmoss Cottages (CAR/R/1194456). Abstraction on River Ugie (CAR/R/1145165). Craigewan Links (CAR/R/5002194). Smiddyhill Bungalow (CAR/R/1195601). Buchan Biogas (CAR/S/1168875).
Water resources (PWSs)	PWS 10 and 11 (Lunderton Farmhouse and Westfield). PWS 26 (West Thunderton). PWS 27 (Parkhill Cottage). PWS 30 (Parkhill).
Flood risk receptors (residential properties)	No specific receptors have been identified as being at risk from the Project in the FRA, due to embedded environmental measures and appropriate mitigation by design.

20.4.5 Potential effects

20.4.5.1 The potential effects on water resources and flood risk receptors that have been scoped in for assessment are summarised in **Table 20.3**.

Table 20.3 Potential effects for water resources and flood risk

Receptor	Activity or impact	Potential effect
Construction stage		
Flood risk receptors; WFD coastal / transitional water body and potentially water dependent conservation sites	Landfall(s) – cable and associated earthworks resulting in potential impacts on surface water quantity / quality and / or flood risk (Construction).	Works within a tidal flood plain and WFD coastal / transitional water body. Potential for surface water quality impacts and short-term displacement of flood waters. Effect anticipated to be Not Significant upon assessment of effects associated with specific infrastructure locations and development with embedded environmental measures as required.
Flood risk receptors; WFD transitional / surface water/ groundwater water bodies, associated PWSs and licensed abstractions	Onshore route – cable route construction (including watercourse crossings) and associated earthworks resulting in a potential impact on surface water quantity / quality, hydromorphology, groundwater levels /quality and / or flood risk (Construction).	Subsurface works, surface works within fluvial and tidal floodplains, use of fuels oils and other chemicals on site. Effect anticipated to be Not Significant upon assessment of effects associated with specific infrastructure locations and development with embedded environmental measures as required.
Flood risk receptors; WFD transitional / surface water / groundwater water bodies and associated PWSs and licensed abstractions	Substation – construction and associated earthworks resulting in a potential impact on surface water quantity / quality, groundwater levels / quality and / or flood risk (Construction).	Subsurface works, surface works potentially within fluvial and tidal floodplains, use of fuels oils and other chemicals on site. Effect anticipated to be Not Significant upon assessment of effects associated with specific infrastructure locations and development with embedded environmental measures as required.
O&M stage		
Flood risk receptors; WFD transitional / surface water/	Operation and maintenance activities resulting in a potential impact on surface water quantity / quality, groundwater quality,	Subsurface works, surface works potentially within fluvial and tidal floodplains, use of fuels oils and other chemicals on site.

Receptor	Activity or impact	Potential effect
groundwater water bodies and associated PWSs and licensed abstractions	hydromorphology and / or flood risk (Operation / Maintenance).	Effect anticipated to be Not Significant upon assessment of effects associated with specific infrastructure locations and development with embedded environmental measures as required.
Decommissioning stage		
Flood risk receptors; WFD transitional / surface water / groundwater water bodies and associated PWSs and licensed abstractions	Decommissioning activities (including the potential removal of the underground structures of the joint bays, fibre optic cable junction boxes and link boxes will be removed only if it is feasible) resulting in a potential impact on surface water quantity / quality, groundwater water quality, hydromorphology and / or flood risk (Decommissioning).	Surface works potentially within fluvial or tidal floodplains, use of fuels, oils or other chemicals. Effect anticipated to be Not Significant upon assessment of effects associated with specific infrastructure locations and development with embedded environmental measures as required.

20.4.6 Effects scoped out of assessment

20.4.6.1 A number of potential effects have been scoped out from further assessment, resulting from a conclusion of no likely significant effect. These conclusions have been based on the knowledge of the baseline environment, the nature of planned works and the professional judgement on the potential for impact from such projects more widely. The conclusions follow (in a site-based context) existing best practice. Each scoped out activity or impact is considered in turn in **Table 20.4**.

Table 20.4 Activities or effects scoped out of assessment

Activity or impact	Rational for scoping out
Landfall(s) - during the construction stage cable and associated earthworks resulting in potential impacts on groundwater levels	Subsurface works will be limited to the coastal area, and the local water table will be connected to the sea levels therefore no impact on freshwater groundwater levels is anticipated.
O&M activities resulting in a potential impact on groundwater levels	O&M activities will not involve dewatering works and therefore no impact on groundwater levels is anticipated.
Decommissioning activities resulting in a potential impact on groundwater levels	Sub-surface infrastructure will be left in place in the decommissioning stage and there will be no dewatering works and therefore no impacts on groundwater levels are anticipated.

20.5 Methodology for baseline data gathering

20.5.1 Overview

20.5.1.1 Baseline data collection has been undertaken to obtain information over the study area described in **Section 20.4: Scope of the assessment**. The current and future baseline conditions are presented in **Section 20.6: Baseline conditions.**

20.5.2 Desk study

20.5.2.1 The data sources that have been collected and used to inform this water resources and flood risk assessment are summarised in **Table 20.5**.

Table 20.5 Data sources used to inform the water resources and flood risk chapter

Source	Date	Summary	Coverage of study area
Climate data maintained by Meteorological Office (Met. Office) and the UK Climate Resilience Programme (UKCRP)	Date accessed: 19 May 2025.	Met. Office climate data to: Identify annual average rainfall and monthly patterns in rainfall (Met Office, 2025). To provide a climate risk indicator tool for identifying patterns of future climate change (UKCRP, 2025).	Full coverage of the study area.
Mapping and surface water hydrology data	Date accessed: 19 May 2025.	Topography, elevation and relief data to confirm surface water catchments based on: • Mapping (Bing Maps, 2025); • 1:50,000 OS mapping; and • Centre of Ecology and Hydrology (CEH) Flood Estimation Handbook web service (CEH, 2025).	Full coverage of the study area.
Water quality data owned by SEPA and Scottish Government	Date accessed: 19 May 2025.	Water quality data to identify existing catchment pressures (for example. point source and / or diffuse pollution issues), based on: • SEPA (2025d) Water Environment Hub (available online: https://informatics.sepa.org.uk/RBMP3/); • SEPA (2025e) Water Classification Hub; • Scottish Government (2021) River Basin Management Plan (RBMP) for the Scotland RBD; and • Ugie District Fishery Board (2025), publications.	Full coverage of the study area.
Flood risk data owned by SEPA	Date accessed: 19 May 2025.	SEPA (2025f) flood mapping for surface, coastal and flooding, used in Geographical Information Systems (GIS) shapefile format. SEPA (2022e) flood mapping for reservoir flooding.	Full coverage of the study area.

Source	Date	Summary	Coverage of study area
Hydrogeological data owned by British Geological Survey (BGS)	Date accessed: 19 May 2025.	Hydrogeological data to establish underlying aquifer properties and potential pollution risks across study area. BGS (2025a) (1:625,000 Scale) hydrogeological Map. BGS (2025b) Geoindex Sitelink. BGS (2011) User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Groundwater Science Programme, Version 2.	Full coverage of the study area.
Water resource data owned by Aberdeenshire Council and Scottish Government	Date accessed: 19 May 2025.	PWS data received from Aberdeenshire Council. DWPAs in the Scotland RBD maps, Map 9 of 22, Scottish Government, (2025a). DWPAs (groundwater) in the Scotland RBD maps, Map 20 of 22, Scottish Government, (2025b). https://www.gov.scot/publications/drinking-waterprotected-areas-scotland-river-basin-district-maps/.	Full coverage of the study area.
Conservation site data owned by NatureScot	Date accessed: 19 May 2025.	Conservation site data to identify designated sites of hydrological, geological or hydrogeological interest within study area (NatureScot, 2025).	Full coverage of the study area.
Scottish Wetland Inventory	Date accessed: 19 May 2025.	The downloadable version of the wetland inventory database has been provided as an open-source dataset for Scottish wetlands (SEPA, 2025g).	Full coverage of the study area.
Aberdeenshire Council Pre-Application Advice	Date accessed: 19 May 2025	Aberdeenshire Council (Aberdeenshire Council, 2024) provided pre-application advice for consideration of wetlands, this detailed the undesignated wetlands located at NK 10390 51951 and NK 10762 49185.	Full coverage of the study area.

20.5.3 Site surveys

20.5.3.1 The site surveys that have been conducted and used to inform this water resources and FRA are summarised in **Table 20.6**.

Table 20.6 Site surveys undertaken

Survey type	Scope of survey	Coverage of study area
Water resources and flood risk walkover, 15 to 16 September 2024	The purpose of the walkover survey was to validate the key findings of the desk study and further inform the baseline assessment in the EIA.	The walkover survey covered pertinent points of interest along the onshore export cable corridor including the following: • potential GWDTEs, wetlands, PWSs and watercourses such as the Annachie Burn and Cuttie Burn which are in proximity to the Scotstown and Lunderton landfall sites; • onshore export cable corridor crossings of the River Ugie and its tributaries (for example, Burn of Faichfield and other unnamed watercourses); and the onshore substations.
PWS walkover	The purpose of this walkover was to visit the Parkhill PWS to identify its source location and associated infrastructure.	The Parkhill well source was visited to document relevant details about the source location in relation to the Project.

20.5.4 Data limitations

20.5.4.1 There are no known data limitations at the time of this study relating to water resources and flood risk that affect the robustness of this EIA Report.

20.6 Baseline conditions

20.6.1 Current baseline

Topography and climate

20.6.1.1 The area within the study area ranges in elevation from 5 metres (m) Above Ordnance Datum (AOD) at MLWS to around 55m AOD near Thunderton (National Grid Reference (NK 09098 45859)) in the southeast of the study area. In general, the topography maintains a relatively flat profile.

20.6.1.2 The average annual rainfall recorded between 1991 and 2020 within the study area was 830.87 millimetres per annum (mm/a) at the Forehill Climate Station (NK 09490 46250) (Met

Office, 2025). The standard average annual rainfall within the largest (River Ugie) catchment in the study area was 811mm/a between 1961 and 1990 (CEH, 2025).

Surface watercourses and other features

20.6.1.3 The study area crosses several catchments including the River Ugie and the Buchan Coastal WFD surface water catchments (see **Volume 2, Figure 20.1**).

20.6.1.4 The River Ugie catchment covers much of the study area, with headwaters located approximately 23.6 kilometres (km) to the northwest of the study area near New Pitsligo. The tributary watercourses flow in an easterly direction into the River Ugie which is joined by other tributaries before it becomes the Ugie Estuary, which enters the North Sea to the north of Peterhead. The Burn of Faichfield is the main tributary which originates to the north of Meikle Dens then crosses the onshore export cable corridor zone B before joining the River Ugie at Mains of Buthlaw just downstream of the confluence of River Ugie North and South branch before flowing east and crossing the onshore export cable corridor zone A.

20.6.1.5 The Buchan Coastal catchment comprises individual watercourses which drain the northeastern parts of the study area (within the vicinity of the proposed landfall sites) flowing in an easterly direction into the North Sea. Watercourses include the Cuttie Burn which discharges directly to sea and the Annachie Burn which joins the Black Water prior to discharge to the sea.

20.6.1.6 The OS mapping indicates that there is a reservoir at the Forehill Water Treatment Works situated to the south of the River Ugie catchment. There are also a range of other small water features including ponds and artificial agricultural drainage ditches.

Hydrogeology and groundwater vulnerability

20.6.1.7 **Chapter 19: Ground Conditions and Contamination** provides information on geological conditions, whereas this Chapter focusses on hydrogeological conditions and groundwater vulnerability. In summary the northern half of the study area is associated with the Argyll Group (quartzite), whereas the southern half of the study area is associated with ‘Unnamed Igneous Intrusion’ of late Silurian to early Devonian age bedrock.

20.6.1.8 The BGS Online Digital 1:625,000 scale Hydrogeology viewer (BGS, 2025b) indicates that across the study area the bedrock is typically impermeable (essentially low permeability) rocks, generally without groundwater except at shallow depth.

20.6.1.9 The BGS groundwater vulnerability dataset (BGS, 2011) describes the Argyll Group and Unnamed Igneous Intrusion units as low productivity aquifers, whereby small amounts of groundwater exist in near-surface weathered zones, secondary fractures and rare springs.

20.6.1.10 There are also likely to be areas of localised groundwater contained within the relatively permeable superficial quaternary deposits of alluvium, sand and gravel along river terrace corridors, for instance in the headwater tributary sub catchments of the Buchan Coastal catchment (Black Water and Annachie Burn) and River Ugie catchment (River Ugie and Burn of Faichfield), respectively.

20.6.1.11 Groundwater vulnerability is the tendency and likelihood for general contaminants to move vertically through the unsaturated zone and reach the water table after the introduction at the ground surface. The Groundwater (Scotland) vulnerability dataset (BGS, 2011) accounts for properties of the vertical pathway above the water table, whether it is above an aquifer or not. This indicates that the study area is largely classified as either Zone 3, “*Vulnerable to some pollutants; many others significantly attenuated*” or Zone 4a / Zone 4c, “*being vulnerable to those pollutants not readily absorbed or transformed*”.

Water quality

20.6.1.12 Under the WFD, SEPA has produced a RBMP for the Scotland RBD which was updated in 2021 to manage water quality targets and river basin planning. The aim of the WFD is for all the water bodies to achieve 'Good Status' by 2027 and to ensure no deterioration from current status. The study area is located within the Scotland RBD (Scottish Government, 2021).

Water Framework Directive surface water bodies

20.6.1.13 There are two WFD river water body catchments. **Table 20.7** lists the relevant WFD river water bodies, summarising their range of current statuses, impacted conditions and pressures. **Volume 2, Figure 20.1** also presents a visual overview of the main river catchments and shows the current overall status of individual WFD water bodies.

20.6.1.14 Each of the river water bodies have been designated as 'heavily modified water bodies' (HMWBs) on account of physical alterations by human activity. In each of these cases the uses of such water bodies (for example, providing drainage for agriculture) would be significantly affected by the mitigation required to achieve Good ecological status. Where no better environmental options exist, then these water bodies have 'Good ecological potential' set as their environmental objective. Ecological potential is described as the equivalent of achieving a given ecological status (Good, Moderate or Poor) in water bodies once the impact of physical modifications necessary to support land use has been taken into account.

20.6.1.15 There is also one WFD transitional water body classified at High overall status.

20.6.1.16 The baseline condition of relevant coastal water bodies is also presented within **Chapter 7: Marine Water and Sediment Quality** and **Volume 3, Appendix 6.2**.

Water Framework Directive groundwater water bodies

20.6.1.17 Within the study area there are also three groundwater catchments, all classified as being at Good status as presented in **Table 20.7** and **Volume 2, Figure 20.2**.

Water Framework Directive bodies and classifications

20.6.1.18 **Table 20.7** presents each of the WFD surface water and groundwater bodies along with the summarised range of their overall status, impacted condition and responsible pressures from the RBMP 2021 (Scottish Government, 2021).

Table 20.7 Baseline information on WFD water bodies

Water bodies (individual WFD river water bodies are listed where applicable)	Overall status / potential	Impacted condition - pressures responsible for water body not reaching Good status	Overall objective
WFD River Ugie water body catchment **River Ugie - North / South confl to tidal limit (23215); Faichfield Burn (23217)**	HMWB, Poor Status / potential. HMWB, Moderate Status / potential.	Water Quality - Rural diffuse pollution.	Good ecological potential by 2027.
WFD Buchan coastal river water body catchment **Black Water d/s St Fergus (23062)**	Good Status.	N/A	N/A (already at Good status).
WFD Ugie Estuary transitional water body (2000129)	High Status.	N/A	N/A (already at High status).
WFD Fraserburgh groundwater water body (150634)	Good Status.	N/A	N/A (already at Good status).
WFD Fraserburgh Sand and Gravel (ID:150800)	Good Status.	N/A	N/A (already at Good status).
WFD Mintlaw groundwater water body (150655)	Good Status.	N/A	N/A (already at Good status).
WFD Peterhead groundwater water body (150630)	Good Status.	N/A	N/A (already at Good status).

20.6.1.19 **Table 20.7**, **Volume 2, Figure 20.1** and **Volume 2, Figure 20.2** all indicate that there are a range of existing pressures on water quality, flows, levels, hydromorphology and ecological conditions across the study area.

20.6.1.20 The River Ugie has been identified as holding good quantities of both salmon and sea trout. The Ugie District Salmon Fishery Board, along with Ugie Angling Association and the river management team, operate a hatchery, commission surveys of the juvenile population, repair banks and carry out works to improve spawning bed accessibility to adult salmon and trout (Ugie District Fishery Board, 2025).

Conservation sites

Statutory conservation sites

20.6.1.21 The NatureScot website (NatureScot, 2025) indicates that there are no statutory designated conservation sites (Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Scientific Interest (SSSI) or Ramsar Sites) which have water dependency within the study area. There are also no Local Nature Reserves (LNRs) or Geological Conservation Sites within the study area.

Wetlands

20.6.1.22 As noted in **Section 20.2**, SEPA has identified some wetlands in relation to the Project. The Scottish Wetland Inventory (SEPA, 2025b) identifies numerous wetlands within the study area, as presented in **Volume 3, Appendix 20.1**. Four wetlands have been screened in on the basis of potential hydrological connectivity and considered further within this Chapter.

Groundwater Dependent Terrestrial Ecosystems

20.6.1.23 GWDTEs are wetlands which critically depend on groundwater flows and / or chemistries and are specifically protected under the WFD.

20.6.1.24 In order to identify these, analysis of the NVC findings (see **Volume 3**, **Appendix 23.2: Habitats and Vegetation Report**) were initially cross referenced in accordance with SEPA Guidance on Assessing the Impacts of Development Proposals on GWDTE (SEPA, 2025).

20.6.1.25 The SEPA (2025) guidance states that assessment of potential GWDTEs is required where these are situated within 100m of excavations less than 1m in depth, or within 250m of excavations greater than 1m in depth. Based on this, all potential GWDTEs within 250m of the Onshore Red Line Boundary have been considered.

20.6.1.26 The information presented in **Volume 3, Appendix 20.1** evaluates if there is a likely groundwater dependency as a baseline condition to support GWDTEs.

20.6.1.27 Groundwater dependency for these potential GWDTE areas has been assessed through consideration of possible water supply mechanisms based on local topography, underlying geology and the potential for surface water contributions to habitats. This supporting information is displayed in **Volume 3, Appendix 20.1,** Figures 2 to 4 for reference. Two potential GWDTE parcels were identified as having groundwater conditions which are likely to be moderately groundwater dependant, as well as having a potential hydrological connection to the Project. On this basis it has been screened in for further assessment within this Chapter.

Water resources

Private water supplies

20.6.1.28 PWS information was obtained from Aberdeenshire Council between May 2023 and July 2023. From the data received 31 PWSs have been identified within the study area as presented in **Volume 3, Appendix 20.1,** Figure 1. **Volume 3, Appendix 20.1** presents information on PWSs which has been used to assess the potential for a complete source-pathway-receptor linkage between the Project and the PWS sources. The findings can be summarised as follows:

- twenty-six PWS sources are unlikely to be impacted by the Project, primarily due to intervening distance, or the properties are connected to public water supply and require no further assessment (screened out); and
- five PWS sources are derived from groundwater and potentially at risk from the Project and require further assessment.

SEPA Controlled Activity Regulations abstractions

20.6.1.29 SEPA was contacted in October 2022 to obtain records of CAR[1] applicable activities within the study area.

20.6.1.30 There are eight SEPA CAR abstractions within the study area, as presented in **Volume 3, Appendix 20.1** and illustrated in its associated Figure 1. From the eight SEPA CAR abstractions within the study area, five have been screened in for further assessment due to the potential hydrological connectivity with the Project.

Public water supplies

20.6.1.31 Within the study area the lower course of River Ugie is designated as a surface water DWPA from the North River Ugie / South River Ugie confluence towards its tidal limit in Peterhead (Scottish Government, 2025a). The entirety of the Scotland RBD is designated as a groundwater DWPA (Scottish Government, 2025b). There is a Scottish Water pumping station, which is situated approximately 2.2km downstream of the proposed horizontal directional drilling (HDD) (or similar trenchless technique) crossing beneath the River Ugie. Whilst other trenchless methods are available, HDD (or similar trenchless technique) is presented herein as it is likely to have the largest construction footprint. The River Ugie abstraction is piped to the Forehill Water Treatment Works and then distributed to the surrounding urban area. The public water supply has been screened in as a precautionary approach within this Chapter.

Flood risk

20.6.1.32 **Volume 3, Appendix 20.2** provides a detailed assessment, and the following paragraphs below give a summary of the findings on baseline conditions.

Fluvial flood risk

20.6.1.33 The Project is subject to a low risk of fluvial flooding (SEPA, 2025f) as shown on Figure 1 of **Volume 3, Appendix 20.2**. Underground export cables, positioned below ground level,

[1] The Water Environment (Controlled Activities) (Scotland) Regulations 2011 will be replaced with the Environmental Authorisations (Scotland) Regulations 2025 (EASR), effective from 1 November 2025 (Scottish Government, 2025c). SEPA general binding rules will still apply.

will remain unaffected by fluvial sources. The onshore substations are situated approximately 100m east of the nearest small watercourse at a higher elevation (around 5m to 10m above). Additionally, the access tracks to the substations have been deliberately placed outside fluvial flood risk areas.

20.6.1.34 All temporary primary and secondary construction compounds are located outside SEPA fluvial flood risk zones (SEPA, 2025f). Similarly, the landfall temporary construction compound, trenchless crossing compounds and their respective construction access routes have been sited outside of fluvial flood risk areas, ensuring minimal risk from fluvial sources.

Coastal flood risk

20.6.1.35 No coastal flood risk has been identified for the Project (SEPA, 2025f). The only section near the coastline is where the underground export cables connect to the land. Since all cables will be installed underground, the infrastructure faces no risk from coastal flooding.

Surface water flood risk

20.6.1.36 The surface water flood risk is considered low. Underground export cables, installed below ground level, will remain unaffected by surface water flooding. The onshore substations are situated outside areas identified by SEPA surface water flood maps (SEPA, 2025f) as being at risk. A site visit further confirmed this, as the local topography slopes away from the onshore substations, reducing the likelihood of surface water flooding.

20.6.1.37 Several minor patches of high, medium, and low surface water flood risk were identified within some of the trenchless crossing compound search areas (SEPA, 2025f).

Sewer flood risk

20.6.1.38 The flood risk from sewers is considered low. The underground export cable will remain unaffected by potential sewer flooding. Sewer infrastructure is unlikely to be located beneath the onshore substations. While the A950 carriageway adjacent to the onshore substations may contain some sewer infrastructure, any flooding from any sewers would flow away from the onshore substations.

Groundwater flood risk

20.6.1.39 The groundwater flood risk is considered low. Borehole records from the BGS (BGS, 2025b), available at several locations along the underground export cable corridor, indicate that water was either encountered at greater depths (8m+) or not at all. Although borehole data for the onshore substations is unavailable, the risk remains low due to its higher elevation relative to the surrounding land. Additionally, no signs of emerging groundwater, such as waterlogged ground, were observed during the site visit.

Artificial sources of flood risk

20.6.1.40 No flood risk has been identified from artificial sources such as reservoirs or canals (SEPA, 2022e). The nearest reservoir, Berryhill, is located approximately 1km east of the onshore substations. However, in the event of a breach water would not flow toward the onshore substations, eliminating any potential risk.

20.6.2 Future baseline

20.6.2.1 Information regarding climate change was obtained from the latest UK Climate Projections (UKCP), as summarised in the most recent SEPA guidance for flood risk assessment

(SEPA, 2022d). The UK Climate Change Projections 2018 (UKCP18) is a climate analysis tool which features comprehensive projections for different regions of the UK (Meteorological Office, no date). The sea level rise allowance set out in the SEPA guidance is for a cumulative rise of 0.85m between 2017 and 2100 for the Northeast Basin Region.

20.6.2.2 SEPA's recommended climate change allowance for extreme sea levels has been based on projections of mean sea level rise. As noted in the SEPA guidance, any change in the offshore wave height or size and number of storm surges is uncertain but is expected to have a much smaller effect on coastal flood risk than sea level rise. The UKCP18 marine report also estimates that changes in extreme sea levels, due to changes in storm surge, will be an order of magnitude smaller than changes in extreme sea levels due to changes in mean sea level.

20.6.2.3 The UK Climate Resilience Programme Climate Risk Indicator tool (UKCRP, 2025) also indicates that under the Representative Concentration Pathway 8.5 between the present day and the 2080s, average annual temperatures could increase by approximately 4 degrees Celsius (°C) for the northeast of Scotland. The central estimate also predicts that annual median precipitation could increase by 9%, with winter median precipitation increasing by up to 19% and summer median precipitation decreasing by 23%. The SEPA FRA guidance sets out a 37% peak rainfall intensity allowance for the Northeast River Basin Region up to 2080 and recommends that sensitivity testing is carried out to a higher allowance for developments with a longer duration.

20.6.2.4 Therefore, in winter months there could be an increase in rainfall and reduction in snowfall relative to the current baseline. Future projections also indicate that summer storms are likely to be more intense and frequent. This may lead to more extreme flows during and immediately following such events which, in conjunction with sea level rise, could compromise the effectiveness of existing surface water drainage networks discharging to sea.

20.7 Basis for EIA Report

20.7.1 Maximum design scenario

20.7.1.1 The process of assessing using a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the planning application, marine licences applications and Section 36 consent.

20.7.1.2 The assessment of the maximum adverse scenario for each receptor establishes the maximum potential adverse effect and as a result, effects of greater adverse significance will not arise should any other scenario, (as described in **Chapter 4: Project Description**) to that assessed within this Chapter, and will be taken forward in the final design.

20.7.1.3 The maximum design scenario parameters that have been identified to be relevant to water resources and flood risk are outlined in **Table 20.8** and are in line with the project design envelope (**Chapter 4: Project Description**).

Table 20.8 Maximum design scenario for impacts on water resources and flood risk

Impact / activity	Maximum design scenario parameter	Justification
Construction		

Impact C1: Landfall(s) – cable and associated earthworks resulting in potential impacts on surface water quantity / quality and / or flood risk	Based on maximum footprint of construction activities for all landfall options (Scotstown and Lunderton landfall scenario where export cables make landfall at both Scotstown and Lunderton (north and south)):
	
	• temporary access road(s) up to 6m wide, for location see **Volume 2, Figure 4.1: Onshore Red Line Boundary and Indicative Onshore Infrastructure**.
	• temporary construction compound area 345m x 70m. The temporary construction compound will be used for HDD (or similar trenchless technique) activities, cable pulling and construction of the transition joint bays. In relation to trenchless crossings, HDD has been presented in the EIA. Whilst other trenchless methods are available, HDD is presented herein as it is likely to have the largest construction impact.
	• up to seven below ground, transition joint bays, each transition joint bay has a depth up to 2.5m deep.
	• up to eight cable ducts.
	• cable ducts installed using HDD (or similar trenchless technique) methodology.
	• landfall construction works duration (see the Project construction programme in **Chapter 4: Project Description**):
	  ▸ phase 1 – up to one year;
	  ▸ phase 2 – up to one year; and
	  ▸ phase 3 – up to one year.
	The location of these works will be located to the west of the sand dunes within the Onshore Red Line Boundary.
		The Onshore Red Line Boundary represents the areas where landfall construction works may result in effects to the water environment and provides the worst-case scenario.
		
		The combination of all landfall options, based on the Scotstown and Lunderton landfall scenario, where export cables make landfall at both Scotstown and Lunderton (north and south), would represent the greatest potential risk towards water resources and flood risk potential constraints and receptors which include the fluvial floodplain (Annachie Burn), wetlands, and PWSs near the landfall(s).

Impact C2: Onshore export cable corridor - construction	Maximum footprint of earthworks for each cable route option and any phasing scenario, including temporary construction compounds and construction access roads. This is considered likely to be the combined set of onshore	The Onshore Red Line Boundary represents the areas where onshore temporary construction corridor works may result in effects on the water environment.

Impact / activity	Maximum design scenario parameter	Justification
(including watercourse crossings) and associated earthworks resulting in a potential impact on surface water quantity / quality, hydromorphology, groundwater levels / quality and / or flood risk	export cable corridor routes that relates to both Scotstown and Lunderton landfalls. **Onshore export cable corridor:** • onshore export cable corridor from the landfall(s) to the onshore substations, the corridor is up to 89m wide and an approximate length of 11km. Up to six trenches, with trench depth of up to 1.5m; • onshore export cable corridor from the onshore substations to the SSEN Netherton Hub, the corridor is up to 99m wide and an approximate length of 2.35km. Up to seven trenches, with I trench depth of up to 1.5m; • up to three temporary primary construction compound locations (each up to 125m x 125m in area); • up to 6 temporary secondary construction compound locations (each up to 100m x 100min area); • the width of the temporary construction haul road is up to 6m wide for location see **Volume 2, Figure 4.1**; and • temporary construction haul road aggregate depth is 300mm.	The combination of these onshore export cable corridors onward from each of the Lunderton and Scotstown landfall sites would represent the greatest potential risk towards water resources and flood risk receptors along the export cable corridor.
	Watercourse crossings: • where the trenched sections of temporary onshore export cable corridor cross ditches there will be some temporary haul road watercourse crossings. The duration of temporary construction haul road watercourse crossings is up to two and half years, which is associated with Phase 1 of the onshore export cable corridor construction works. Haul road watercourse crossings could involve a range of crossing methodologies (for example, culverts and open span bridges) to be determined at the post consent stage. The worst-case scenario is associated with culvert watercourse crossings. The crossing schedule for onshore cable corridor crossings is provided in **Volume 3, Appendix 4.1: Crossings Register.** Onshore export cable corridor construction works duration: • phase 1 – up to two and a half years; • phase 2 – up to one year; and • phase 3 – up to one year.	These assessment assumptions represent the maximum potential for disturbance on water environment receptors from watercourse crossings (watercourses and minor drainage ditches). Temporary culverting for temporary haul road is considered to represent a reasonable worst-case crossing methodology (as opposed to open span bridging) in terms of its potential for disturbance and associated effects on receptors' water quality and hydromorphology.

Impact / activity	Maximum design scenario parameter	Justification

Impact C3: Substations – construction and associated earthworks resulting in a potential impact on surface water quantity / quality, groundwater levels / quality and / or flood risk	**Onshore substations:**
	• up to 15 hectares (ha) for the onshore substations with associated structures and infrastructure and a 3.06ha additional temporary construction compound area;
	• a total duration of construction up to nine years across three phases as follows:
	  ▸ phase 1 up to three years;
	  ▸ phase 2 up to three years; and
	  ▸ phase 3 up to three years.
	• two permanent access roads up to 6m wide (up to 4.2ha in area), and
	• the maximum potential for displacement of near-surface groundwater has been associated with piling construction techniques.
		The onshore substations and temporary works areas represent the areas where construction works may result in effects on water environment receptors.
		
		The largest construction footprint would pose the greatest potential risk towards surface and groundwater quality and quantity, which would require an appropriate level of temporary construction drainage attenuation and treatment.

Operation and maintenance		
Impact O1: O&M activities resulting in a potential impact on surface water quantity / quality, groundwater quality, hydromorphology and / or flood risk	**Onshore landfall(s) and onshore export cable corridor:** • all permanent cable and transition joint bay elements will be below ground; and • minimal maintenance required (periodic testing at joint boxes every two to five years) for both preventive and corrective maintenance requirements. **Onshore substations:** • up to 15ha permanent area for onshore substations with two associated permanent access roads up to 4.2ha in area plus drainage / landscaping areas; and • each onshore substation will be operational for up to 35 years.	These areas and timescales represent the permanent infrastructure envelopes that could result in potential effects on the water environment during the O&M stage of the Project. The largest impermeable footprint would require the largest volume of SuDS features to ensure there is no increase in runoff above greenfield runoff rates and / or changes in water quality from the onshore substation site.

Impact / activity	**Maximum design scenario parameter**	**Justification**
Decommissioning		
Impact D1: Decommissioning activities (including the potential removal of watercourse crossings) resulting in a potential impact on surface water quantity / quality, groundwater water quality, hydromorphology and / or flood risk	**Onshore substations:** • The onshore substations and associated access roads will be removed and the site reinstated. • The decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar types and levels of equipment and vehicles. Assessment assumptions as per construction stage. **Onshore export cable corridor:** Onshore electrical cables will be left in-situ with ends cut, sealed and buried to minimise environmental effects associated with removal. The underground structures of the joint bays, fibre optic cable junction boxes and link boxes will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current agricultural use.	For the purposes of a maximum design scenario, impacts no greater than those identified for the construction stage are expected for the decommissioning stage. It is anticipated that the onshore cables will be left in-situ with ends cuts, sealed and buried to minimise effects associated with removal.

20.7.2 Embedded environmental measures

20.7.2.1 As part of the Project design process, a number of embedded environmental measures have been adopted to reduce the potential for adverse impacts on water resources and flood risk. These embedded environmental measures have evolved over the development process as the EIA has progressed and in response to consultation.

20.7.2.2 These measures also include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and are set out in the EIA Report.

20.7.2.3 **Table 20.9** sets out the relevant embedded environmental measures within the design and how these affect the water resources and flood risk assessment.

Table 20.9 Relevant water resources and flood risk embedded environmental measures

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
M-001	Underground cables will be used to connect from the landfall(s) transition joint bays to the onshore substations. An additional section of the onshore export cable corridor will run from the onshore substations to the grid connection point at SSEN Netherton Hub. Cables are typically installed in ducts in a standard buried trench arrangement (or directly into the trench) with appropriate insulation, providing protection from temperature extremes and changes in soil moisture.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise interactions with the surface water environment (changes in surface water flow pathways).
M-002	Sensitive sites will be avoided by the temporary and permanent onshore project footprint including SPAs, SACs, SSSIs, National Nature Reserve (NNR), LNRs, Local Wildlife Sites (LWS), Ancient woodland, areas of consented development, areas of historic landfill and other known areas of potential contamination, Scottish National Trust land, listed buildings and scheduled monuments, potable water supply abstractions, floodplains and geomorphic risk areas.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP**, description of Project and planning conditions.	This measure will minimise potential impacts on groundwater or surface water designated sites, ecosystems and features.
M-003	A crossing schedule of the grid connection crossings will be prepared, this will include crossing methodologies, where required, for all roads, rail, core paths, rights of way and watercourses.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will ensure appropriate crossing methodologies are in place to minimise changes in watercourse conveyance.
M-004	At any sensitive features identified along the route, including sensitive crossing locations, the working width of the temporary construction corridor will be reduced as far as practicable to avoid or minimise potential environmental effects.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise potential impacts on groundwater or surface water designated sites, ecosystems and features.
M-005	To reduce the environmental impact of the landfall, a trenchless solution is to be implemented to install ducts. Determination of the most suitable trenchless landfall crossing method will be undertaken during the detailed design stage of the Project, following geotechnical investigation of the onshore and nearshore areas.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP**, description of Project and planning conditions.	This measure will minimise potential impacts on groundwater or surface water designated sites, ecosystems and features.
M-006	Vegetation (trees / woodland / hedgerows): Vegetation will be retained where possible as detailed in **Volume 3, Appendix 23.10: Arboricultural Impact Assessment** and **Volume 3, Appendix 23.10,** Figure 1 Tree Removal and Protection Plan. Otherwise, vegetation removal will be undertaken in line with British Standard (BS) 5837-2012 (Trees in relation to design, demolition and construction) and scheduled to avoid bird breeding seasons. Ancient woodland will be retained with a stand-off of a minimum of 25m from any surface construction works (HDD (or similar trenchless technique)) a depth >6m). With regards to other woodland / forestry, the onshore export cable construction corridor will be reduced, where practical, to minimise tree loss and where the construction corridor passes close to woodland that is being retained, BS5837:2012 root protection to apply. Hedgerows with trees / tree lines which are crossed by the onshore export cable route corridor will be notched to reduce landscape impacts. All hedgerows that are to be retained, coppiced, notched (vegetation removed only where trenching occurs) or lost are to be mapped. Vegetation may be coppiced / pruned to allow access and visibility splays at junctions.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP**, description of Project and planning conditions.	This measure will minimise potential impacts on groundwater or surface water designated and undesignated sites, ecosystems and features.
M-008	Pollution control strategy will be in line with good practice and in accordance with Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) licence regulations, pollution prevention plans and emergency plans to be drawn up to detail how ground and surface waters and the ecological features they support, would be protected in construction and operation. These will include information on the storage of any fuels, oils and other chemicals and pollution incidence response planning, plus measures for the protection of licenced and private abstractions. This could include a monitoring regime associated with critical or very proximate receptors.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise the potential for accidental contamination entering watercourses, or groundwater.
M-013	During both construction and operation stages, vehicle maintenance and refuelling / oil changes for machinery / equipment will be undertaken within designated areas where spillages can be easily contained, and machinery will be routinely checked to ensure it is in good working condition. The areas at risk of spillage or containing hazardous materials, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals), will comply with industry good practice for pollution prevention, be appropriately bunded, have appropriate containment and segregation and will be risk assessed and carefully sited to minimise the risk of hazardous substances entering the drainage system, local watercourses, or sensitive land based receptors. Such areas will be sited at least 10m from a watercourse, in accordance with the SEPA CAR Practical Guide (SEPA, 2024), and away from areas at risk of flooding.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise the potential for accidental contamination entering watercourses, or groundwater. The Outline CEMP now reflects the replacement of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 with the Environmental Authorisations (Scotland)

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
	Additionally, the bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage/spillage. An Incident Management Plan will be in place during construction and operation. All works will be carried out in accordance with The Pollution Prevention and Control (Scotland) Regulations 2012 and the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended.			Regulations 2025 (EASR), effective from 1 November 2025 (Scottish Government, 2025c).
M-014	No blasting is anticipated to be required, and trenchless crossings will be undertaken by non-impact methods.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise silt laden contaminated runoff entering watercourses.
M-015	During construction topsoil and subsoil will be stored within the construction working corridor of the onshore export cable corridor. The topsoil and subsoil will be stored in separate stockpiles, in line with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Any suspected or confirmed contaminated soils will be separated, contained and tested before removed and adequate leachate / runoff drainage will be implemented to prevent migration of contaminants from stockpiles.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise silt laden contaminated runoff entering watercourses and groundwater.
M-016	In areas (or during periods of adverse weather) there may be the requirement to import aggregates to minimise erosion or transport of sediment from construction. Options such as bog-matting, geotextiles, floating roads will be considered by the principal contractor for sensitive sections of the route to reduce impact. **Volume 4: Outline CEMP** will include a commitment to review and implement additional protective measures for soil stockpiles, if needed, to control sediment run-off due to heavy rainfall / flood conditions and maintain soils in a drier condition.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise silt laden contaminated runoff entering watercourses and groundwater.
M-019	The onshore export cable will be constructed in sections. The trenches will be excavated, the cable ducts will be laid, the trenches backfilled, and the reinstatement process commenced in as short a timeframe as practicable.	Scoping	**Volume 4: Outline CEMP**.	This measure will minimise silt laden / contaminated runoff entering groundwater and watercourses, changes in watercourse morphology and flow conveyance.
M-020	Emergency Response Plans for flood events will be prepared for all construction activities, working areas, access and egress routes in floodplain areas. These plans will be provided for both construction and O&M stages and will include evacuation procedures for personnel.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise the risk to construction staff working within the Annachie Burn floodplain. It will also minimise the risk of silt / contaminants entering watercourses.
M-022	Following completion of construction, temporary construction compounds will be returned to the standard identified and agreed in the Decommissioning Plan.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential flood risk impacts towards the Contractor and other third party receptors.
M-023	Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. These field drains will discharge to local drainage ditches through silt traps, as appropriate, to minimise sediment release.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	These measures will minimise silt laden / contaminated runoff entering watercourses, changes in flow rates / pathways and watercourse conveyance.
M-063	A CEMP to be implemented by the contractor in accordance with **Volume 4: Outline Construction Environmental Management Plan**. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction stage.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	**Volume 4: Outline CEMP** will provide documentation which will contain relevant water environment measures for overall protection of the water environment.
M-069	The construction work will comply with regulations, including the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) and associated SEPA guidance. Any necessary authorisations will be obtained from SEPA and complied with. Construction activities which may require authorisation from SEPA include discharging run-off from construction areas; work on the riverbank; the installation of coffer dams; dewatering excavations; and use of herbicides.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise a decline in groundwater levels and an increase in flow within watercourses. The Outline CEMP now reflects the replacement of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 with the Environmental Authorisations (Scotland) Regulations 2025 (EASR), effective from 1 November 2025 (Scottish Government, 2025c).

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
M-070	Soils and excavated materials will be managed in accordance with SEPA regulatory guidance on Promoting the Sustainable Reuse of Greenfield Soils in Construction, and Waste Management Guidelines for the re-use of excavated materials and remediation. The best practice for soil handling in the Defra Construction Code of Practice will be applied for handling of topsoil and subsoil. A Soil Management Plan (SMP) will be developed for use during construction to protect soil resources and agricultural land quality. The SMP will be used in conjunction with a Peat Management Plan as required for instance, if the Project encounters areas of peat.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise silt laden contaminated runoff entering watercourses.
M-076	Where trenchless techniques are not required or are not practical, the crossing of drainage ditches or engineered channels may be by open cut techniques or the installation of culverts or bridges to allow water to continue flowing. Where this is the case, this will be done in accordance with The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended, and the General Binding Rules in the SEPA Practical Guide (SEPA, 2024). Appropriate authorisations from SEPA will be applied for, if required for the Project.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will help maintain watercourse conveyance. The Outline CEMP now reflects the replacement of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 with the Environmental Authorisations (Scotland) Regulations 2025 (EASR), effective from 1 November 2025 (Scottish Government, 2025c). The General Binding Rules in the SEPA Practical Guide (SEPA, 2024) will continue to be applicable.
M-077	Where possible micro-siting will be undertaken during detailed design to avoid ponds and wetlands.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise potential impacts on groundwater or surface water sites, ecosystems and features.
M-078	A depth of up to 1.5m to the base of an onshore export cable trench is assumed. In sensitive areas, the amount of topsoil removed will be the width of the trenches only, rather than across the entire temporary construction corridor.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise the need for dewatering from trenched excavations, which will help limit potential effects upon groundwater availability, and will minimise potential impacts on groundwater or surface water sites, ecosystems and features.
M-080	Drainage design to manage and, if necessary, treat surface water run-off will be included in all elements of temporary construction sites and permanent operational infrastructure. A CAR licence will be required for all sites that exceed 5ha in area. Drainage design will follow the SuDS hierarchy principles including allowances for climate change and discharged at pre-development rates (as set out in **Volume 4: Outline Operational Drainage Management Strategy**). Where the development intersects overland flow pathways or areas of known surface water flooding appropriate measures will be embedded into the design. All subsurface infrastructure will be designed to facilitate subsurface flow pathways to avoid any localised increases in groundwater flooding.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise changes to surface water flow rates / pathways and water quality, and will minimise changes to groundwater quality, quantity and flooding. The Outline CEMP now reflects the replacement of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 with the Environmental Authorisations (Scotland) Regulations 2025 (EASR), effective from 1 November 2025 (Scottish Government, 2025). The General Binding Rules in the SEPA Practical Guide (SEPA, 2024) will continue to be applicable.
M-081	Construction and permanent development in flood plains will be avoided. Where this is not possible mitigation will be developed to ensure the works are compliant with policy requirements.	Scoping Amended at EIA Report	**Volume 4: Outline CEMP** and planning conditions.	This measure will ensure development is steered outside of floodplain areas to reduce potential flood risk impacts.
M-082	Licenced and PWSs will be avoided where practicable; if any impacts are anticipated then appropriate measures will be put in place to avoid impact on the quantity and quality of the supply.	Scoping	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential effects on the quantity and quality of all abstractions.
M-124	The Project will follow Scottish Water's 'Precautions to Protect Drinking Water and Scottish Water Assets During Windfarm Construction and Operational Activities' guidance. Where it is impractical for infrastructure and activities to be located outside of the River Ugie DWPA, then all infrastructure and activities should be located 100m from any	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential effects on the quantity and quality of all abstractions.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
	watercourse wherever possible, and a minimum of 50m distance where 100m can be demonstrated to be undeliverable. This includes cable trenches, soil stockpiles, access tracks, trenchless crossing, temporary construction related activities such as plant, refuelling, storage of hazardous materials, cement batching, waste storage, concrete preparation, wheel washing / washout areas, and temporary construction compound areas.			
M-125	If it is not practicable for construction welfare facilities/ wastewater facilities to be located outside of the River Ugie drinking water catchment, then portable toilets should be used and waste disposed of offsite during construction. At the pre-construction post consent stage, the final Drainage Management Strategy will set out the strategy for the operational stage onshore substations waste facilities following further discussion and agreement with Scottish Water.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential effects on the quantity and quality of all abstractions.
M-126	River WFD waterbodies (River Ugie and Burn of Faichfield) and their tributary watercourses (within the River Ugie DWPA) will be crossed via trenchless construction techniques to help minimise potential impacts on water quality at these locations. The depth of the trenchless crossing will be such that the riverbed and watercourse is undisturbed by construction activities. Specific construction method statements will be prepared.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise any impacts to the morphological condition and water quality of River WFD waterbodies.
M-127	Entry and / or exit pits for trenchless crossings will be located outside of the fluvial floodplain to minimise potential flood risk and protect construction staff.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential flood risk impacts towards the Contractor and other third party receptors.
M-128	The Contractor(s) will identify springs, abstractions and any sewerage infrastructure including treatment plants, septic tanks, soakaways, interconnecting pipes and outfalls that require appropriate protection. These features will be mapped, and appropriate exclusion zones will be applied to ensure that construction methods do not disturb the physical infrastructure layout. All appointed Contractor staff will be given training to protect abstractions deemed to be at risk. In the event that an abstraction is identified as being at risk of water quality deterioration, a comprehensive sampling programme will be agreed with the relevant authority for the abstraction in question. Furthermore, in the event that there is an impact on a water supply, an alternative supply will be made available.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential effects on the quantity and quality of all abstractions.
M-129	Where there is a potentially significant detrimental impact identified to Parkhill PWS ID: 30 then an alternative water supply will be considered along with the existing PWS. Prior to the commencement of construction, the property affected would be provided with an alternative water supply (subject to the agreement from the PWS owner). The Applicant will cover the costs of providing alternative supplies. In the event of an alternative water source being implemented, Aberdeenshire Council and SEPA would be advised as soon as practicable. Upon agreement this in turn would negate the need for further assessment and monitoring for that supply.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential effects on the quantity and quality of PWS:30.
M-131	During construction, a programme of visual inspections will be undertaken to ensure that the potential effects on the River Ugie and its tributaries are appropriately monitored. The visual inspection points will be selected downstream of construction areas.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help ensure that any potential silt laden runoff is appropriately monitored and controlled.
M-132	Contractors will be made aware of their statutory responsibility not to "*cause or knowingly permit water pollution*." A Pollution Prevention Plan and Pollution Incident Response Plan will be prepared for the Project, the latter in line with Pollution Prevention Guideline 21 (PPG 21, 2025), and all contractors will be briefed on these plans, with copies made available on site.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will help minimise the potential for accidental contamination entering watercourses or groundwater.
M-137	A water quality monitoring programme and / or further assessment will be carried out for PWSs which have been identified as being at potential risk from the Project (PWS ID: 10/11 Lunderton Farmhouse and Westfield and PWS ID:26 West Thunderton). Private water supply monitoring would be undertaken for an appropriate period prior to during and post construction of the onshore export cable corridor.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for contamination towards PWSs.
M-138	Best practice techniques and methodologies will be undertaken during the implementation of HDD (or similar trenchless technique) works. The HDD (or similar trenchless technique) works are to be undertaken in accordance with Pipeline Design for Installation of Horizontal directional drilling (Manual of Practice) by ASCE Oct 2014 or similar. Environmentally hazardous drilling fluids, or those containing groundwater hazardous substances, will not be used during trenchless crossings (including HDD (or similar trenchless technique)). The naturally occurring bentonite clay will be used as the base for the drilling fluid, which will line the bore wall, preventing fluid loss and near-surface groundwater ingress. Techniques will be employed by the Contractor(s) to manage the risk of drilling fluid breakout or losses into the deposits	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for accidental contamination from drilling fluids entering watercourses or groundwater and impacts on water resources.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
	or strata surrounding the HDD (or similar trenchless technique) bore. Drilling fluids will be used to seal permeable deposits or strata.			
M-139	During HDD (or similar trenchless technique) activities, the drilling fluid engineer will carefully monitor the fluid usage in the recycling system and will quickly identify if fluid is being lost into the strata. If fluid loss is identified there are a number of measures that can be taken to seal the bore, including the following which would be incorporated into a breakout response plan: 1. Modifying the drilling fluid properties to increase the effectiveness of the bentonite clay filter cake that lines the wall of the borehole; 2. Standard process and procedures in place for drilling, data collection and communication; 3. Appropriate drill fluid monitoring (fluid properties, fluid volume and flow, and downhole annular pressure); 4. Addition of stop-loss materials to bridge and seal larger voids in the soil; and 5. Modifying the mud weight (drilling fluid density) to either balance or counter the groundwater pressure depending on ground conditions.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for accidental contamination from drilling fluids entering watercourses or groundwater and impacts on water resources.
M-140	The Contractor(s) for construction, operation and decommissioning will use a short to medium range weather forecasting service from the Met. Office, or other approved meteorological data and weather forecast provider, to inform short to medium-term programme management of activities, including implementation of necessary environmental control and / or impact embedded environmental measures with respect to climate conditions and extreme weather events. The Contractor(s) will register with SEPA's flood warning service (Floodline) in areas of flood risk. The Contractor(s) will use this information to ensure that relevant measures, including those within the Outline CEMP and an Environmental Management System, are implemented and, as appropriate, consider additional measures to ensure the resilience of the programme during extreme weather events.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise potential flood risk impacts towards the Contractor and other third-party receptors.
M-141	Access roads will have cross drainage provided where necessary at topographic low points.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will help minimise changes to surface flow pathways.
M-142	Stockpile gaps will be located at topographic low points to preserve existing flow paths and where stockpiles are placed on both sides of the access routes / haul road the gaps will coincide.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will help minimise changes to surface flow pathways.
M-143	Any tanks and associated pipe work containing oils, fuels and chemicals will be double skinned and provided with leak detection equipment. There will be a bunded capacity of 100% of the maximum tank volume for non-hazardous fluids. For hazardous chemicals, fuels or oils bund capacity will be the larger of 110% of the largest tank volume for single tank bunds (or, in the case of multi tank bunds, 110% of the largest tank capacity or 25% of the combined tank capacity, whichever is the largest).	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for accidental contamination entering watercourses or groundwater.
M-144	In the event that piling is required for the installation of the onshore substations foundations, a detailed piling risk assessment will be prepared. This will be submitted to the SEPA for approval, prior to the commencement of construction.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for contamination of groundwater.
M-145	In areas where there is a potential for hydrocarbon residues from run-off / isolated leakages, surface water drainage measures will be provided to capture hydrocarbons prior to discharge, such as hydrocarbon interceptors.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will help minimise the potential for accidental contamination entering watercourses or groundwater.
M-146	The location of statutory undertaker assets (including water supply and sewer pipes, water and waste treatment works etc.) will be confirmed through inspection of detailed plans from the undertakers. All assets potentially affected by the Project will be identified, with particular consideration to access roads and crossings.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for disruption to existing water supply, sewerage and discharge infrastructure.
M-147	To enable access during construction, temporary clear span bridges will be used for those temporary watercourse crossings too wide or deep to be crossed using culverts.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for changes to watercourse conveyance.
M-148	In areas where there are groundwater seepages / flush zones identified along the access tracks at the detailed design stage, the Contractor(s) will utilise geotextiles beneath the track material or bog-mat where necessary to prevent the track from settling into the ground to help maintain sub-surface flow.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise changes to the sub-surface groundwater flow regime.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures will be secured	Relevance to water resources and flood risk assessment
M-149	If water being pumped from excavations is suspected to be contaminated, appropriate measures will be taken in accordance with SEPA guidance and the Controlled Activity Regulations to prevent uncontrolled or unauthorised releases of this water to ground or to the water environment.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for contaminated runoff to enter watercourses or groundwater.
M-150	Dewatering of trench excavations will be carefully monitored and groundwater flow disruption and drawdown will be minimised via good construction practices. The time any excavation is open will be kept to a minimum to minimise ingress of water and dewatering requirements.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise a decline in groundwater levels and an increase in flow within watercourses.
M-151	Temporary cut-off drains will be installed to prevent surface water and shallow groundwater ingress into excavations. Intercepted water will be encouraged to infiltrate into the ground, mimicking natural flow patterns in accordance with the principles of SuDS. Where discharge of cut-off drains to watercourses is the only practical option, appropriate measures will be employed to moderate runoff rates and promote settlement of suspended sediment.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for changes in runoff rates / pathways and groundwater levels.
M-152	Culverting activities and onshore construction of cable circuit crossings will take place during periods of normal to low flow conditions to avoid conveyance-related flood risk effects.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise the potential for changes in watercourse conveyance.
M-153	Stockpiles will be present for the shortest practicable timeframe, with stockpiles being reinstated as the construction work progresses in order to minimise areas of exposed soil and any associated silt laden run-off. Stockpiles which remain present for six months or longer will be seeded to encourage stabilisation.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will help minimise the potential for silt laden runoff entering watercourses.
M-154	Any temporary crossings will be in place for the minimal time possible.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will minimise the potential for silt laden / contaminated runoff entering watercourses, and changes in watercourse morphology and conveyance.
M-155	Temporary watercourse crossings will not be provided for the haul road where the cable crossing will be trenchless. Vehicular access will use existing public highways and bridges.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will minimise the potential for silt laden / contaminated runoff entering watercourses, and changes in watercourse morphology and conveyance.
M-156	All permanent export cable crossings will pass beneath the bed of watercourses (there will be no 'within bank' crossings). Sufficient depth between the bed of the watercourse and the top of the cable (whether trenchless or open cut) will be provided to ensure no potential for exposure of cable due to scour.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	This measure will minimise changes in watercourse conveyance and morphology.
M-157	Run-off from access routes / haul road and working areas will be allowed to infiltrate wherever possible.	EIA Report.	**Volume 4: Outline CEMP** and planning conditions.	These measures will minimise the potential for displacement of floodwater and changes in surface water flow pathways.
M-164	**Volume 4: Outline Operational Drainage Management Strategy** has been provided to provide the outline proposals for drainage required for the operation of the onshore substations. The outline strategy provides a feasible drainage strategy which would adequately control site runoff at the operational onshore substations which can be delivered within the Onshore Red Line Boundary for the onshore substations to meet policy requirements. **Volume 4: Outline Operational Drainage Management Strategy** has designed the SuDS to accommodate 1:200 year (0.5% AEP) plus 37% climate change based on the SEPA guidance. The outline strategy retains flexibility in design for the detailed design of the onshore substations. A detailed Operational Drainage Management Strategy would be produced following consent and prior to the construction of the onshore substations. This would be produced in accordance with **Volume 4: Outline Operational Drainage Management Strategy** and with further consultation with SEPA and Aberdeenshire Council.	EIA Report.	Planning conditions	This measure will minimise increases in flow within watercourses.

20.7.2.4 Further detail on the embedded environmental measures in **Table 20.9** is provided in the **Volume 3, Appendix 5.2: Commitments Register**, which sets out how and where particular embedded environmental measures will be implemented and secured.

20.8 Methodology for EIA Report

20.8.1 Introduction

20.8.1.1 The project-wide approach to assessment is set out in **Chapter 5: Approach to EIA.** Whilst this has informed the approach that has been used in this water resources and flood risk assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of water resources and flood risk.

20.8.2 Significance evaluation methodology

Overview

20.8.2.1 The significance level attributed to each effect has been assessed based on the 'sensitivity; (value) of the affected receptor and the magnitude of change resulting from the Project. The level of significance has then been determined by the combination of value and magnitude.

Value of receptor

20.8.2.2 Value is assessed on a four-point scale of high, medium, low and very low, whilst magnitude is assessed on a four-point scale of high, medium, low and negligible. The criteria for defining value and magnitude can be found in **Table 20.10** and **Table 20.12** respectively, along with example applications. These criteria are defined and applied based on professional judgement, using recognised approaches to classification relevant to the receptor types, including WFD water body classifications and reference to the Design Manual for Roads and Bridges, and which represent good practice for water environment EIA (Standards for Highways, 2025).

Table 20.10 Sensitivity value of receptors

Value	Criteria	Examples
High	Features with a high yield, quality or rarity, with little potential for substitution.	• conditions supporting a site with an international conservation designation (for example, SAC, SPA, Ramsar site), where the designation is based specifically on aquatic features; • WFD surface water body (or part thereof) with overall 'High' or 'Good' status / potential; and • WFD groundwater body (or part thereof) with overall 'High' or 'Good' status.
	Water use supporting human health and economic activity at a regional scale.	Regionally important CAR-licenced public surface water or groundwater supply (and associated catchment) or permitted discharge.

Value	Criteria	Examples
	Features with a high vulnerability to flooding.	Land use type defined as 'Essential Infrastructure' (for instance, critical national infrastructure, such as essential transport and utility infrastructure) and 'Most Vulnerable Use' (for example, police / ambulance stations that are required to operate during flooding, mobile homes intended for permanent residential use) in the SEPA flood risk and land use vulnerability classification.
Medium	Features with a medium yield, quality or rarity, with a limited potential for substitution.	• conditions supporting a site with a national conservation designation (for example, SSSI, NNR), where the designation is based specifically on aquatic features; • WFD surface water body (or part thereof) with overall Moderate or lower status / potential; and • WFD groundwater body (or part thereof) with overall Poor status.
	Water use supporting human health and economic activity at a local scale.	CAR licenced non-public surface water and groundwater supply abstraction (and associated groundwater catchment) which is relatively large relative to available resource, or where raw water quality is a critical issue, for example: industrial process water, or permitted discharge. Potable surface water and groundwater abstraction (and associated catchment) for example: private domestic water supply.
	Features with a moderate vulnerability to flooding.	Land use type defined as 'Highly Vulnerable Use' in the SEPA flood risk and land use vulnerability classification (for example, most types of residential development, hostels and hotels, landfill and waste management facilities).
Low	Features with a low yield, quality or rarity, with some potential for substitution.	Conditions supporting a site with a local conservation designation (for example, LNR, Local Nature Conservation Site where the designation is based specifically on aquatic features, or an undesignated but highly / moderately water-dependent ecosystem, including a GWDTE. Receptor is a protect wetland (identified on the SEPA (2025) Scottish Wetland Inventory) which itself is not part of a SSSI, SAC or SPA. Non-reportable WFD surface water or groundwater body (or part thereof), or non-WFD water body.
	Water use supporting human health and economic activity at household / individual business scale.	CAR registered non-public surface water and groundwater supply abstraction (and associated catchment), which is relatively small relative to available resource, or where raw water quality is not critical, for example: cooling water, spray irrigation, mineral washing or permitted discharge.

Value	Criteria	Examples
	Features with a low vulnerability to flooding.	Land use type defined as 'Least Vulnerable uses' in the SEPA flood risk and land use vulnerability classification. (for example, most types of business premises).
Very Low	Commonplace features with very low yield or quality with good potential for substitution.	Conditions supporting undesignated ecosystems or those with low sensitivity to water supply, such as a LWS, undesignated GWDTE or pond.
	Water use does not support human health, and of only limited economic benefit.	Unlicenced non-potable surface water and groundwater abstraction (and associated catchment), for example livestock supply.
	Features that are resilient to flooding.	Land use type defined as 'Water-compatible use' in the SEPA flood risk and land use vulnerability classification and undeveloped land (for example, flood control infrastructure, or water transmission infrastructure).

20.8.2.3 Based on information on baseline conditions in **Section 20.6** and the criteria from **Table 20.10,** an assessment of value is provided below in **Table 20.11** for each of the identified receptors.

Table 20.11 Identified water environment receptors and sensitivity

Receptor group	Receptors included within group	Sensitivity	Rationale
WFD groundwater bodies	Peterhead (Waterbody ID: 150630). Mintlaw (Waterbody ID: 150655). Fraserburgh (Waterbody ID: 150634). Fraserburgh Sand and Gravel (150800).	**High**	WFD groundwater bodies with overall 'Good' status.
WFD surface water bodies	<u>River Ugie Catchment</u> River Ugie – North / South confl to tidal limit (Waterbody ID: 23215). Faichfield Burn (Waterbody ID: 23217).	**Medium**	WFD surface water with overall Moderate or lower status.
	<u>WFD Buchan Coastal River water body catchment</u> Black Water d/s St Fergus (Waterbody ID: 23062).	**High**	WFD surface water bodies with overall 'Good' status.
WFD transitional water bodies	Ugie Estuary (Waterbody ID: 200129).	**High**	WFD transitional water bodies with overall 'Good' status.
Conservation sites	None identified within study area.	**N/A**	N/A.
Wetlands	NK 10754 52759 SD17 Dune Slacks. NK 11518 49754 S28 Swamp. NK 11704 50093 S19 Swamp.	**Low**	Receptor is a protected wetland (identified on the SEPA (2025) Scottish

Receptor group	Receptors included within group	Sensitivity	Rationale
	NK 11360 49142 S28 Swamp. NK 10390 51951 Non-specified wetland. NK 10762 49185 Non-specified wetland.		Wetland Inventory) which itself is not part of a SSSI, SAC or SPA.
GWDTE	MG10 *Holcus lanatus* - *Juncus effusus* rush-pasture.	**Low**	An undesignated, but potentially moderately water-dependent ecosystem, including GWDTEs.
Water Resources (Public Water Supplies)	Surface Water DWPA – River Ugie and associated Scottish Water abstraction serving the Forehill Water Treatment Works. The entirety of the Scotland RBD is designated as a groundwater DWPA.	**High**	Regionally important licenced public surface water (and associated catchment).
Water Resources (CAR abstractions)	Craigewan Links (CAR/R/5002194) (Purpose: Abstraction and/or Borehole Construction and Operation for a Registration level abstraction).	**Low**	Water abstractions under CAR licences, and their associated catchments (and associated catchment. Relative size and purpose of abstractions is partly unknown but include fish production and golf course abstraction. A low sensitivity has been assigned for the golf course abstraction. As part of a reasonable worst case scenario a Medium sensitivity has been assigned for the fish production abstraction, and activities with the unknown purpose.
	Abstraction on River Ugie (CAR/R/1145165) (Purpose – Abstraction for fish production); 1 Hallmoss Cottages (CAR/R/1194456) (Purpose: Unknown); Smiddyhill Bungalow (CAR/R/1195601) (Purpose: Unknown); and Buchan Biogas (CAR/S/1168875) (Purpose: Unknown).	**Medium**	
Water Resources (PWS)	PWS 10 and 11 (Lunderton Farmhouse and Westfield). PWS 26 (West Thunderton). PWS 27 (Parkhill Cottage). PWS30 (Parkhill).	**Medium**	Surface water and groundwater abstractions for drinking water supply.
Flood risk receptors (residential properties)	No specific receptors have been identified as being at risk from the Project in the FRA due to embedded environmental measures and appropriate mitigation by design.	N/A	N/A

Magnitude of change

20.8.2.4 The magnitude of change from baseline conditions includes a consideration of the duration and reversibility of the change, and relevant legislation, policy standards and guidance. **Table 20.12** provides examples of how various magnitudes of change could be determined with respect to water features.

20.8.2.5 Magnitude of change may be either positive or negative. The criteria and examples in **Table 20.12** focus on negative changes, but positive changes may also occur and will be considered on a case-by-case basis as required.

Table 20.12 Definitions of magnitude of change

Magnitude	Criteria	Examples
High	Results in complete loss or major change to feature, of sufficient magnitude to affect its use / integrity.	Deterioration in river flow regime, morphology or water quality, leading to sustained, permanent or long-term breach of relevant conservation objectives or non-temporary downgrading (deterioration) of WFD surface water body status (including downgrading of individual WFD elements), or resulting in the inability of the surface water body to attain Good status by the relevant deadline in line with the measures identified in the RBMP. Deterioration in groundwater levels, flows or water quality, leading to non-temporary downgrading of WFD groundwater body status, or the inability of the groundwater body to attain Good status in line with the measures identified in the RBMP. Complete or severely reduced water availability and / or quality, compromising the ability of water users to abstract. Change in flood risk resulting in potential loss of life or major damage to the property or infrastructure.
Medium	Results in partial loss or noticeable change to feature, of sufficient magnitude to affect its use / integrity in some circumstances.	Deterioration in river flow regime, morphology or water quality, leading to periodic, short-term and reversible breaches of relevant conservation objectives, or potential temporary downgrading of surface water body status (including potential temporary downgrading of individual WFD elements), although not affecting the ability of the surface water body to achieve future WFD objectives. Deterioration in groundwater levels, flows or water quality, leading to potential temporary downgrading of WFD groundwater body status, although not affecting the ability of the groundwater body to achieve future WFD objectives. Moderate reduction in water availability and / or quality, which may compromise the ability of the water user to abstract on a temporary basis or for limited periods, with no longer-term impact on the purpose for which the water is used.

Magnitude	Criteria	Examples
		Change in flood risk resulting in potential for moderate damage to the property or infrastructure.
Low	Results in minor change to feature, with insufficient magnitude to affect its use / integrity in most circumstances.	Measurable effect on river flow regime, morphology or water quality, but remaining generally within conservation objectives, and with no short-term or permanent change to WFD surface water body status (of overall status or element status). Measurable effect on groundwater levels, flows or water quality, but with no short-term or permanent downgrading of WFD groundwater body status. Minor reduction in water availability and / or quality, but unlikely to affect the ability of a water user to abstract. Change in flood risk resulting in potential for minor damage to property or infrastructure.
Negligible	Results in little or no change to feature, with insufficient magnitude to affect its use / integrity.	No measurable effect on river flow regime, morphology or water quality, and no consequences in terms of conservation objectives or surface water body status. No measurable effect on groundwater levels, flows or water quality, and no consequences in terms of WFD groundwater body status. No measurable change in water availability or quality and no change in ability of the water user to exercise licenced rights. Increased frequency of flood flows, but which does not pose an increased risk to property or infrastructure.

Significant evaluation

20.8.2.6 During the assessment of effects for each identified receptor, the value in **Table 20.10** will be combined with the magnitude of change from **Table 20.12** to produce an overall significance rating based on the evaluation matrix shown in **Table 20.13**.As a general rule, **Major** and **Moderate** effects are considered to be **Significant** and **Minor** and **Negligible** effects are considered to be **Not Significant**. However, professional judgement is applied, where appropriate, to determine significance of effect. Where effects are assessed, according to the matrix in **Table 20.13** to be **Potentially Significant** in EIA terms, professional judgement is applied to determine whether they are Significant or Not Significant.

Table 20.13 Significance evaluation matrix

		Magnitude of change			
		High	**Medium**	**Low**	**Negligible**
Value	**High**	**Major (Significant)**	**Major (Significant)**	**Moderate (Potentially Significant)**	**Minor (Not Significant)**
	Medium	**Major (Significant)**	**Moderate (Potentially Significant)**	**Minor (Not Significant)**	**Negligible (Not Significant)**
	Low	**Moderate (Potentially Significant)**	**Moderate (Potentially Significant)**	**Negligible (Not Significant)**	**Negligible (Not Significant)**
	Very Low	**Moderate (Potentially Significant)**	**Negligible (Not Significant)**	**Negligible (Not Significant)**	**Negligible (Not Significant)**

20.9 Assessment of effects: construction stage

20.9.1 Overview

20.9.1.1 This Section provides an assessment of the effects for water resources and flood risk from the construction of the onshore elements of the Project.

20.9.1.2 The assessment methodology set out in **Section 20.8** has been applied to assess effects to water resources and flood risk from the Project.

20.9.2 Impact C1: landfall(s) - cable and associated earthworks resulting in potential impacts on surface water quantity / quality and / or flood risk

20.9.2.1 Relevant landfall construction works at the landfall(s) will comprise HDD (or similar trenchless technique) installation techniques, use of a landfall temporary construction compound, excavation and reinstatement of transition joint bays for the jointing of transitional offshore and onshore export cables and construction access via a temporary construction access road.

20.9.2.2 These works lie within sub-catchments of the Buchan Coastal river water body catchment which include several unnamed ditch tributaries and the Annachie Burn which drains into the Black Water d/s St Fergus, as identified within **Section 20.6**. Within these catchments there are several wetlands as identified in **Volume 3, Appendix 20.1** that have been screened in for assessment.

20.9.2.3 The Onshore Red Line Boundary of the landfall temporary construction compound search area for the Scotstown landfall area are situated in the near vicinity of the Annachie Burn fluvial floodplain. Each of the three potential landfall locations have also been carefully sited well away from any areas of coastal flood risk. As noted in **Chapter 4: Project Description,** up to three potential landfall locations have been taken forward to ensure there is adequate space for the necessary cables to be brought ashore, as well as for the onshore infrastructure required for the onward power transmission, such as temporary construction compounds. The indicative landfall infrastructure has been carefully sited outside of the fluvial floodplain to mitigate any potential effect.

20.9.2.4 **Table 20.14** lists all of the potential effects associated with the construction of the landfall(s). As presented within the Scoping Report (Marram Wind Limited, 2023), landfall works are not anticipated to result in potential effects on groundwater levels or groundwater water quality during construction. This has been scoped out on the basis that works will be limited to the coastal area and the local water table will be connected to the sea levels, and therefore unlikely to be altered much by the site works. None of the potential effects identified for the landfalls relate to water resources (PWSs, public water supplies or SEPA CAR abstractions) or GWDTEs, given that there are none of these features in the vicinity of the proposed construction works.

20.9.2.5 An indication is provided of the range of the value, magnitude and significance definitions for each potential effect in **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11**. The magnitude of change, and hence the significance, of potential effects have been assessed on the basis that the embedded environmental measures listed in **Table 20.9** including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.14 Potential residual effects from the construction of the landfall(s)

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Surface WFD Water Body (Buchan Coastal River water body catchment Black Water d/s St Fergus (23062) Groundwater WFD Body (Fraserburgh Groundwater body (150634, Fraserburgh Sand and Gravel Groundwater body (150800))	**High**	Potential for accidental contamination entering watercourses or groundwater, associated with spillage or leakage of fuels, lubricants or other chemicals. This includes the potential for leakage of bentonite during HDD (or similar trenchless technique).	M-001, M-003, M-004, M-008, M-013, M-015, M-016, M-069, M-076, M-124, M-125, M-126, M-127, M-132, M-138, M-139, M-143, M-145, M-149.	**Negligible**	**Minor adverse** (**Not significant**).
Surface WFD Water Bodies (Buchan Coastal River water body catchment Black Water d/s St Fergus (23062))	**High**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering watercourses and / or intertidal areas.	M-001, M-002, M-003, M-004, M-008, M-015, M-016, M-023, M-069, M-080, M-124, M-132, M-142, M-145, M-149, M-150, M-151, M-153.	**Negligible**	**Minor adverse** (**Not Significant**).
Wetlands (SD17 Dune Slacks, S28 Swamp, S19 Swamp, Non-specified wetlands)	**Low**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering wetlands.	M-001, M-002, M-003, M-004, M-008, M-015, M-016, M-023, M-M-069, M-077, M-080, M-124, M-132, M-142, M-145, M-149, M-150, M-151, M-153.	**Negligible - Low**	**Negligible** (**Not Significant**).
Flood risk receptors	No specific receptors identified in **Volume 3, Appendix 20.2**.	Changes in runoff rates and new flow pathways associated with ground disturbance and the development of temporary access tracks and temporary construction compound areas.	M-023, M-080, M-081, M-140, M-141, M-147, M-148, M-151, M-152, M-155, M-156, M-157 M-164.	**Negligible**	**Negligible** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
		Increases in flow in watercourses due to dewatering of excavations.	M-078, M-140, M-150, M-151, M-157.	**Negligible**	**Negligible** (**Not Significant**).

20.9.3 Impact C2: onshore export cable corridor - construction (including watercourse crossings) and associated earthworks resulting in a potential impact on surface water quantity / quality, hydromorphology, groundwater levels / quality and / or flood risk

20.9.3.1 The onshore export cable corridor lies within all of the sub-catchments of the Buchan Coastal and River Ugie water body catchments identified in **Section 20.6** Therefore, each of the water environment receptors that were screened in **Table 20.11** have a potential connection to the onshore export cable corridor. For the purposes of clear presentation below (**Table 20.15**) the receptors have been grouped into their generic types**.**

20.9.3.2 The onshore export cable corridor has been carefully routed to minimise interaction with the numerous PWS and SEPA CAR abstractions, floodplains and a public water supply, along with other environmental and engineering constraints. A number of key embedded environmental measures (see **Table 20.9**) have been put in place to ensure that such receptors are adequately considered and protected. In certain cases (PWSs 10 and 11: Lunderton Farmhouse and Westfield; PWS 26: West Thunderton and PWS 30: Parkhill) the PWSs have been identified within 250m of the onshore export cable corridor and consequently they are in potential hydrological connection with the Project (see **Volume 3, Appendix 20.1** and its associated Figure 1). On this basis, a commitment (M-137) has been made for further detailed assessment and monitoring (subject to the outcomes of that assessment) post consent and prior to construction. In relation to PWS 30: Parkhill the proposed HDD (or similar trenchless technique) works are likely to be directly below the well and therefore the Applicant has made a specific commitment to the provision of an alternative water supply (subject to the agreement from the PWS owner) at that location, prior to any construction to avoid any potential impact (M-129)[2]. This measure (M-129) would remove the need for further assessment and monitoring at Parkhill, as it would remove any pathway for contamination towards that supply. The export cable corridor crosses the floodplains of Annachie Burn, River Ugie and Burn of Faichfield therefore the use of HDD (or similar trenchless technique) crossing methodologies with careful siting of entry and exit pits outside of floodplain areas (M-126, M-127) would help to mitigate flood risk on-site. The Project crosses part of the River Ugie DWPA and several embedded environmental measures (M-124, M-125, M-131) are identified to protect the public water supply, which is situated approximately 2.2km downstream of the trenchless crossing of the River Ugie.

20.9.3.3 Based on the findings of **Volume 3, Appendix 20.1** there are two potential GWDTE parcels which are also located within the Onshore Red Line Boundary for the export cable corridor. The first is located within the River Ugie floodplain and has been screened in for assessment due to the proximity to an adjacent well which may reflect some degree of groundwater dependency. Another is located between the onshore substations and SSEN Netherton Hub. As noted within **Volume 3, Appendix 20.1** this habitat parcel is indicated to be partly rainwater and surface water fed within a topographic hollow. However, it has been screened in for assessment, as part of a precautionary approach, on account of the superficial deposits (alluvium, gravel, silt, clay and silt) which may offer some degree of groundwater dependency. Nonetheless, the proposed HDD (or similar trenchless technique) works at those locations would be undertaken at a depth well below the superficial layer and based on the implementation of good industry practices (M-138, and M-139), it is considered that there will be negligible impact on these receptors.

[2] It is also known from Scottish Water asset information that there is an existing mains network in the area which could potentially be connected into

20.9.3.4 **Table 20.15** lists the potential adverse effects associated with the construction of the onshore export cable corridor in relation to the water environment. An indication is provided of the range of the value, magnitude and significance definitions for each potential effect in **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11**. The magnitude of change, and hence the significance, of potential effects have been assessed on the basis that the embedded environmental measures listed in **Table 20.9** including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.15 Potential residual effects during onshore export cable corridor construction

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater WFD Water Bodies **Peterhead (150630)** **Mintlaw (150655)** **Fraserburgh (150634)** **Fraserburgh Sand and Gravel (150800)**	**High**	A decline in groundwater levels arising from dewatering of the trenched excavations for cabling or the development of less permeable access track / temporary construction compound establishment reducing infiltration.	M-003, M-004, M-006, M-019, M-069, M-078, M-080, M-148, M-150, M-151, M-157.	**Negligible**	**Minor adverse** (**Not Significant**).
Groundwater WFD Water Bodies **Peterhead (150630)** **Mintlaw (150655)** **Fraserburgh (150634)** **Fraserburgh Sand and Gravel (150800)**	**High**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering groundwater.	M-004, M-008, M-013, M-014, M-015, M-016, M-019, M-020, M-023, M-070, M-132, M-138, M-139, M-149, M-153.	**Negligible**	**Minor adverse** (**Not Significant**).
Surface Water WFD Water Bodies (River and Transitional) **(River Ugie - North/South confluence to tidal limit (23215) Faichfield Burn (23217) Black Water d/s St Fergus (23062)**	**Medium - High**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering watercourses.	M-004, M-008, M-013, M-014, M-015, M-016, M-019, M-020, M-023, M-070, M-078, M-131, M-132, M-149, M-153, M-154, M-155.	**Negligible - Low**	**Negligible - Minor adverse** (**Not Significant**).
	Medium - High	Changes to watercourse morphology as a result of works in or near watercourses (for example, installation of watercourse crossings and associated earthworks).	M-001, M-002, M-004, M-019, M-069, M-076, M-080, M-126, M-142, M-147, M-154.	**Negligible**	**Negligible - Minor adverse** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
GWDTEs	**Low**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering GWDTE.	M-002, M-003, M-004, M-006, M-008, M-014, M-015, M-016, M-019, M-020, M-023, M-070, M-077, M-078, M-078, M-080, M-132, M-138, M-139, M-145, M-148, M-149, M-150, M-151, M-153.	**Low**	**Negligible** (**Not Significant**).
PWSs	**Medium**	Reduction of water availability to support existing surface water and groundwater abstractions as a consequence of water quantity and / or quality effects. This could arise from dewatering of the trenched excavations for cabling, ground disturbance for the development of temporary access track / temporary construction compound establishment, or the leakage / spillage of fuels and chemicals onsite. This includes the potential for breakout and leakage of bentonite during trenchless crossing.	M-002, M-003, M-004, M-005, M-008, M-013, M-014, M-015, M-016, M-019, M-023, M-069, M-070, M-076, M-078, M-080, M-082, M-124, M-125, M-126, M-128, M-129, M-131, M-132, M-137, M-138, M-139,, M-142, M-143, M-145, M-148, M-149, M-150, M-151 M-153,M-157.	**Low**	**Minor adverse** (**Not Significant**).
Public Water Supply	**High**		M-002, M-003, M-004, M-005, M-008, M-013, M-014, M-015, M-016, M-019, M-023, M-069, M-070, M-076, M-078, M-080, M-124, M-125, M-126, M-127, M-128, M-131, M-132, M-138, M-139, M-142, M-143, M-145, M-147,M-149, M-151,M-152,M-154, M-155.	**Negligible**	**Minor adverse** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
SEPA CAR Abstractions	**Low - Medium**.		M-002, M-003, M-004, M-005, M-008, M-013, M-014, M-015, M-016, M-019, M-023, M-069, M-070, M-076, M-078, M-080, M-082, M-124, M-125, M-126, M-128, M-129, M-131, M-132, M-138, M-139, , M-141, M-142, M-143, M-145, M-148, M-149, M-150, M-151, M-153, M-154, M-155, , M-157.	**Negligible**	**Negligible** (**Not Significant**).
Flood risk receptors	No flood risk receptors identified in **Volume 3, Appendix 20.2**.	Changes in watercourse conveyance associated with temporary watercourse crossings.	M-003, M-019, M-076, M-147, M-152, M-154, M-155.	**Negligible**	**Negligible** (**Not Significant**).
		Changes in runoff rates and new flow pathways associated with ground disturbance and the development of temporary access tracks and temporary construction compound areas.	M-003, M-019, M-023, M-080, M-081, M-140, M-141, M-147, M-151, M-152, M-155, M-157.	**Negligible**	**Negligible** (**Not Significant**).
		Increases in flow in watercourses due to dewatering of excavations.	M-003, M-019, M-023, M-069, M-078, M-140, M-150, M-151.	**Negligible**	**Negligible** (**Not Significant**).

20.9.4 Impact C3: onshore substations construction and associated earthworks resulting in a potential impact on surface water quantity / quality, groundwater levels / quality and / or flood risk

20.9.4.1 The onshore substations are located within the catchment of an unnamed tributary of the River Ugie, as shown on **Volume 2, Figure 20.1**.

20.9.4.2 The onshore substations are overlying the Mintlaw groundwater WFD water body as shown on **Volume 2, Figure 20.2**. None of the wetlands, SEPA CAR abstractions or PWSs identified have a potential connection to the onshore substations. Given that the onshore substations are situated within part of the River Ugie DWPA the associated public water supply abstraction located approximately 4km downstream has been considered on a precautionary basis. No specific potential flood risk receptors have been identified within **Volume 3, Appendix 20.2**, however potential effects and relevant embedded environmental measures have been considered for completeness.

20.9.4.3 **Table 20.16** lists the potential effects associated with the construction of the onshore substations in relation to water resources and flood risk. An indication is provided of the range of the value, magnitude and significance definitions for each potential effect based on **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11** The magnitude of change, and hence the significance, of potential effects have been assessed on the basis that the embedded environmental measures listed in **Table 20.9** including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.16 Potential residual effects during construction of the onshore substations

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater WFD water bodies **(Mintlaw 150655)**	**High**	A decline in groundwater levels arising from of the trenched excavations for the onshore substations or piling if it is required for the installation of sub-surface foundations.	M-069, M-080, M-132, M-144, M-148, M-150, M-151.	**Negligible**	**Minor Adverse** (**Not Significant**).
Groundwater WFD water bodies **(Mintlaw 150655)**	**High**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering groundwater.	M-006, M-008, M-013, M-014, M-015, M-016, M-019, M-020, M-132, M-149, M-151, M-153.	**Negligible**	**Minor Adverse** (**Not Significant**).
Surface water WFD water bodies (river and transitional) **(River Ugie – North / South confluence to tidal limit (23215)**	**Medium**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering watercourses.	M-006, M-008, M-013, M-014, M-015, M-016, M-019, M-020 M-023, M-070, M-131, M-132, M-149, M-153.	**Low**	**Minor Adverse** (**Not Significant**).
	Medium	Changes to watercourse morphology as a result of works in or near watercourses (for example, associated with earthworks for establishment of temporary construction compounds).	M-002, M-019, M-069, M-080, M-142, M-147, M-154.	**Negligible**	**Negligible** (**Not Significant**).
Public Water Supply **(surface water DWPA - River Ugie and associated Scottish Water abstraction serving the Forehill Water Treatment Works)**	**High**	Reduction of water availability to support existing surface water and groundwater abstractions as a consequence of water quantity and / or quality effects. This could arise from dewatering of the excavations or piling for installation of onshore substations foundations, ground disturbance for the development of temporary construction compound establishment, or the leakage / spillage of fuels and chemicals onsite.	M-002, M-008, M-013, M-015, M-016, M-020, M-023, M-069, M-070, M-082, M-124, M-125, M-131, M-132, M-143, M-144, M-145, M-146, M-149, M-150, M-153.	**Negligible**	**Minor Adverse** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Flood risk receptors	No specific receptors identified in **Volume 3, Appendix 20.2**.	Changes in runoff rates and new flow pathways associated with ground disturbance and the development of temporary access tracks and temporary construction compound areas.	M-023, M-080, M-081, M-140, M-141, M-147, M-148, M-151, M-152, M-154, M-155, M-157.	**Negligible**	**Negligible** (**Not Significant**).
		Increases in flow in watercourses due to dewatering of excavations.	M-078, M-140, M-150, M-151, M-157.	**Negligible**	**Negligible** (**Not Significant**).

20.10 Assessment of effects: operation and maintenance stage

20.10.1 Overview

20.10.1.1 This Section provides an assessment of the effects for water resources and flood risk from the O&M of the onshore elements of the Project.

20.10.1.2 The assessment methodology set out in **Section 20.8** has been applied to assess effects to water resources and flood risk from the Project.

20.10.2 Impact O1: O&M activities resulting in a potential impact on surface water quantity / quality, groundwater quality, hydromorphology and / or flood risk.

Landfall(s) and onshore export cable corridors

20.10.2.1 The O&M stage will include the maintenance and refurbishment (if / as required) during the lifespan of the Project. The landfall transition joint bays, onshore export cables and associated joint bays will be installed with protection from faults, and it is considered that their operation will largely be maintenance-free (non-intrusive routine testing will be undertaken). Should damage or a fault occur, testing will identify its specific location so that any excavations or infrastructure replacement can be isolated. Given the minimal extent and similarity of activities for the landfall(s) and onshore export cable corridor, they are both considered together within this Section. As such, each of the potential receptors that were considered for the landfall(s) and onshore export cable corridor infrastructure during the construction stage are also considered in this Section.

20.10.2.2 It has been assumed that the temporary construction access tracks and associated watercourse crossings utilised during construction will not be required during the O&M stage. Should repairs be necessary, there could be potential for localised ground disturbance or potential for accidental contamination from machinery. The length of cable replacement would be subject to failure location and would be several metres in length. On that basis, potential effects during the O&M stage are expected to be considerably reduced and limited in scale in comparison to the construction stage due to this targeted approach.

20.10.2.3 As outlined in the Scoping Report (MarramWind, 2023), it is unlikely that there will any dewatering during the O&M stage given that work onsite will be targeted on isolated repairs. The only potential effect on the movement of sub-surface and groundwater flow pathways could be associated with the presence of protective covers for ducts and a selected backfill (either originally excavated material or Cement Bound Sand) surrounding material for thermal insulation around the buried cable circuits. The power cables will be covered by metallic sheath exteriors and metallic screens and will be connected to concrete lined joint bays, which will be limited in extent therefore any potential effects on groundwater pathways are considered to be negligible.

20.10.2.4 The Scotstown and Lunderton landfalls lie within the sub-catchments of the Annachie Burn tributary of the Black Water and other tributaries respectively, whilst the onshore export cable corridor lies within the River Ugie and Burn of Faichfield sub catchments identified in **Section 20.6**. Therefore, each of the water receptors that were screened in **Table 20.15** and are potentially affected by the O&M works. For the purposes of clear presentation below (**Table 20.17**), the receptors have been grouped into their generic types.

20.10.2.5 **Table 20.17** lists the potential effects associated with the O&M of the landfall(s) and the onshore export cables in relation to the water environment. An indication is provided of the range of the value, magnitude and significance definitions for each potential effect based on **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11** The magnitude of change, and hence the significance, of potential effects have been assessed on the basis that the embedded environmental measures listed in **Table 20.9** including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.17 Potential residual effects during the operation and maintenance of the landfall(s) and onshore export cables

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater WFD water bodies **Peterhead (150630)** **Mintlaw (150655)** **Fraserburgh (150634)** **Fraserburgh Sand and Gravel (150800)**	**High**	Potential for accidental contamination entering groundwater or watercourses. This could arise from isolated cable repairs or the leakage / spillage of fuels and chemicals from vehicles onsite.	M-005, M-008, M-013, M-132, M-145.	**Negligible**	**Minor Adverse** (**Not Significant**).
Surface water WFD water bodies (river and transitional) **(Buchan Coastal River water body catchment Black Water d/s St Fergus (23062) and** **(River Ugie – North / South confl to tidal limit (23215))**	**Medium - High**.	Changes to watercourse morphology due to the permanent presence of erosion protection around cable crossings. Cable crossings may exacerbate downstream or upstream bank and bed erosion and sediment deposition.	M-001, M-005, M-076, M-078, M-126, M-156.	**Negligible**	**Negligible - Minor Adverse** (**Not Significant**).
GWDTE and wetlands	**Low**	Reduction of water availability to support existing groundwater or surface water designated or undesignated sites, ecosystems and features as a consequence of quantity / quality effects from isolated repairs, and the leakage / spillage of fuels and chemicals from vehicles onsite or from diversion of sub-surface land drainage flow pathways due to the permanent presence of limited below	M-001, M-005, M-008, M-013, M-132.	**Negligible**	**Negligible** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
		ground concrete-lined joint bays and backfilled material around cable circuits.			
PWSs	**Medium**	Reduction of water availability to support existing surface water and groundwater abstractions as a consequence of water quality and / or quantity effects. This could arise from isolated repairs, and the leakage / spillage of fuels and chemicals from vehicles onsite; or from diversion of sub-surface land drainage flow pathways due to the permanent presence of limited below ground concrete lined joint bays and backfilled material around cable circuits.	M-001, M-005, M-008, M-013, M-129, M-132, M-137.	**Negligible**	**Negligible** (**Not Significant**).
Public Water Supply	**High**		M-001, M-005, M-008, M-013, M-082, M-124, M-132.	**Negligible**	**Minor Adverse** (**Not Significant**).
SEPA CAR abstractions	**Low - Medium**.		M-001, M-005, M-008, M-013, M-082, M-132.	**Negligible**	**Negligible** (**Not Significant**).
Flood Risk Receptors	No flood risk receptors identified in **Volume 3, Appendix 20.2**.	Changes in runoff rates and new flow pathways associated with ground disturbance during isolated repairs of landfall transition joint bay or cable circuits.	M-001, M-022, M-080. M-151.	**Negligible**	**Negligible** (**Not Significant**).

Onshore substations

20.10.2.6 The onshore substations will not be permanently staffed, and it will typically be monitored remotely using closed circuit television. Inspection and minor servicing may be required for the electrical plant, but it is anticipated that the onshore substations will require minimal scheduled O&M activities. It has also been assumed that access to any of the onshore substations will primarily be along existing transport routes. Therefore, the type and small magnitude of effects are likely to be similar to those described above for the O&M of the landfalls and onshore export cables.

20.10.2.7 Foul drainage at the onshore substations would be collected in either of the following ways:

- mains connection discharging to the Scottish Water sewer system, if available; or
- septic tank located within the onshore substation site.

20.10.2.8 The preferred method for controlling foul waste would be determined during detailed design and will depend upon the availability and cost of a mains connection and the number of visiting hours staff would attend site.

20.10.2.9 **Volume 4: Outline Operational Drainage Management Strategy** provides the outline proposals for drainage required for the operation of the onshore substations (see M-164). The outline strategy provides a feasible drainage strategy for the control of site runoff at the operational onshore substations which can be delivered within the Onshore Red Line Boundary in line with the various policy requirements. The outline strategy retains flexibility in design for the detailed design of the onshore substations. A detailed Operational Drainage Strategy would be produced following consent and prior to the construction of the onshore substations. This would be produced in accordance with the Outline Operational Drainage Management Strategy and with further consultation with SEPA and Aberdeenshire Council.

20.10.2.10 The drainage from the onshore substations' impermeable substation footprint, permanent access roads and the presence of underground export cables have the potential to disrupt infiltration and displace shallow groundwater. **Table 20.18** lists the potential effects associated with the O&M of the onshore substations in relation to the water environment. An indication is provided in of the range of the value, magnitude and significance definitions for each potential effect based on **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11**. The magnitude of change, and hence the significance, of potential effects have been assessed on the assumption that the embedded environmental measures listed in **Table 20.9** including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.18 Potential residual effects during the O&M of the onshore substations

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater WFD water bodies **(Mintlaw 150655)**	**High**	Isolated cable repairs or the leakage / spillage of fuels and chemicals from vehicles onsite or during occasional maintenance visits to the onshore substations.	M-008, M-013, M-132.	**Negligible**	**Minor Adverse** (**Not Significant**).
Groundwater WFD water bodies **(Mintlaw 150655)**	**High**	The presence of a below ground onshore export cables, onshore substations support structures and impermeable surfaces, resulting in a reduction in groundwater levels.	M-022, M-080, M-164.	**Negligible**	**Minor Adverse** (**Not Significant**).
Surface water WFD water bodies (river and transitional) **River Ugie – North / South confl to tidal limit (23215)**	**Medium**	Isolated cable repairs or the leakage / spillage of fuels and chemicals from vehicles onsite or during occasional maintenance visits to the onshore substations.	M-008, M-013, M-132.	**Negligible**	**Negligible** (**Not Significant**).
Public Water Supply (surface water DWPA – River Ugie and associated Scottish Water abstraction serving the Forehill Water Treatment Works)	**High**	Isolated repairs, and the leakage / spillage of fuels and chemicals from vehicles onsite or during occasional maintenance visits to the onshore substations, or from diversion of sub-surface land drainage flow pathways due to the permanent presence of limited below ground concrete lined joint bays, backfilled material around cable circuits and below ground onshore export cables, onshore substations support structures and impermeable surfaces, leading to reduction of water availability to support existing surface water and groundwater abstractions as a consequence of quantity / quality effects.	M-008, M-013, M-132.	**Negligible**	**Minor Adverse** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Flood risk receptors	No flood risk receptors identified in **Volume 3, Appendix 20.2**.	Changes in runoff rates and new flow pathways associated with the impermeable onshore substations' footprint.	M-080, M-081, M-164.	**Negligible**	**Negligible** (**Not Significant**).

20.11 Assessment of effects: decommissioning stage

20.11.1 Overview

20.11.1.1 This Section provides an assessment of the effects for water resources and flood risk from the decommissioning of the onshore elements of the Project.

20.11.1.2 The assessment methodology set out in **Section 20.8** has been applied to assess effects to water resources and flood risk from the Project.

20.11.2 Impact D1: Decommissioning activities (including the potential removal of watercourse crossings) resulting in a potential impact on surface water quantity / quality, groundwater water quality, hydromorphology and / or flood risk

Landfall(s) and onshore export cables corridor

20.11.2.1 At the decommissioning stage, it is anticipated that the onshore electrical cables will be left in-situ with ends cut, sealed and buried to minimise environmental effects associated with removal. The underground structures of the joint bays, fibre optic cable junction boxes and link boxes will be removed only if it is feasible with minimal environmental disturbance or if their removal is required to return the land to its current agricultural use.

20.11.2.2 On this basis, **Table 20.19** lists the potential effects associated with the decommissioning of the landfall(s) and export cables in relation to water resources and flood risk. An indication is provided in of the range of the value, magnitude and significance definitions for each potential effect based on **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11**. The magnitude of change, and hence the significance, of potential effects have been assessed on the assumption that the embedded environmental measures listed including the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.19 Potential residual effects during decommissioning of the landfall(s) and onshore export cables

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater and surface water WFD water bodies **Peterhead (150630)** **Mintlaw (150655)** **Fraserburgh (150634)** **Fraserburgh Sand and Gravel (150800).** **(River Ugie - North/South confluence to tidal limit (23215)** **Faichfield Burn (23217)** **Black Water d/s St Fergus (23062)**	**Medium - High**.	Potential for accidental contamination entering groundwater or watercourses. This could arise from isolated cable decommissioning works and the leakage / spillage of fuels and chemicals from vehicles onsite.	M-002, M-008, M-013, M-016, M-020, M-070, M-080, M-020, M-078, M-132, M-143, M-145, M-149, M-150, M-151, M-153.	**Negligible**	**Negligible - Minor Adverse** (**Not Significant**).
Surface water WFD water bodies (river and transitional) **(River Ugie - North/South confluence to tidal limit (23215)** **Faichfield Burn (23217)** **Black Water d/s St Fergus (23062)**	**Medium - High**.	Changes to watercourse morphology due to the permanent presence of erosion protection around cable crossings. Cable crossings may exacerbate downstream or upstream bank and bed erosion and sediment deposition.	M-019, M-126, M-156.	**Negligible**	**Negligible - Minor Adverse** (**Not Significant**).
GWDTE and wetlands	**Low**	Reduction of water availability to support existing groundwater or surface water designated or undesignated sites, ecosystems and features as a consequence of quantity / quality effects from isolated decommissioning works, and the leakage / spillage of fuels and chemicals from vehicles onsite or from diversion of sub-surface land drainage flow pathways due to the permanent presence of limited	M-002, M-008, M-013, M-016, M-020, M-070, M-080, M-132, M-143, M-145, M-149, M-150, M-151, M-153.	**Negligible**	**Negligible** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
		below ground concrete-lined joint bays and backfilled material around cable circuits.			
PWSs	**Medium**	Reduction of water availability to support existing surface water and groundwater abstractions as a consequence of water quality and / or quantity effects. This could arise from isolated decommissioning works, and the leakage / spillage of fuels and chemicals from vehicles onsite; or from diversion of sub-surface land drainage flow pathways due to the permanent presence of limited below ground concrete lined joint bays and backfilled material around cable circuits.	M-002, M-008 M-013, M-020, M-016, M-070, M-080, M-082, M-124, M-125, M-128, M-129, M-132, M-137, M-143, M-149, M-150, M-151, M-153.	**Negligible**	**Negligible** (**Not Significant**).
Public Water Supply	**High**		M-002, M-008, M-013, M-016, M-020, M-070, M-080, M-124, M-125, M-128, M-132, M-143, M-151, M-146, M-149, M-150, M-151, M-153.	**Negligible**	**Minor Adverse** (**Not Significant**).
SEPA CAR abstractions	**Low - Medium**.		M-002, M-008, M-013, M-016, M-020, M-070, M-080, M-082, M-124, M-125, M-128, M-132, M-143, M-145,	**Negligible**	**Negligible** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
			M-149, M-150, M-151, M-153.		
Flood risk receptors	No flood risk receptors identified in **Volume 3, Appendix 20.2**.	Changes in runoff rates and new flow pathways associated with ground disturbance during decommissioning of landfall transition joint bay or cable circuits.	M-080, M-142, M-151, M-154, M-155, M-157.	**Negligible**	**Negligible** (**Not Significant**).

Onshore substations

20.11.2.3 The onshore substations and associated access roads will be removed and the site reinstated. The decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar types and levels of equipment and vehicles. The onshore substation site will be restored to its original state or made suitable for an alternative use. Further detail will be provided in an onshore decommissioning plan, prepared prior to the start of any decommissioning activities.

20.11.2.4 On this basis, **Table 20.20** lists the potential effects associated with the decommissioning of the onshore substations in relation to the water environment, and an indication is provided in of the range of the value, magnitude and significance definitions for each potential effect based on **Table 20.10**, **Table 20.12** and **Table 20.13** and the receptor value assessments in **Table 20.11**. The magnitude of change, and hence the significance, of potential effects have been assessed on the assumption that the embedded environmental measures listed in **Table 20.9** and the **Volume 4: Outline CEMP** are implemented as part of the Project.

Table 20.20 Potential residual effects during decommissioning of the onshore substation

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
Groundwater WFD water bodies (**Mintlaw 150655)**	**High**	Potential for accidental contamination entering groundwater associated with spillage or leakage of fuels, lubricants or other chemicals.	M-002, M-008, M-013, M-023, M-069, M-070, M-080, M-132, M-143, M-145, M-148, M-149, M-153.	**Negligible**	**Minor Adverse** (**Not Significant**).
Surface water WFD water bodies (river and transitional) **(River Ugie – North / South confl to tidal limit (23215)**	**Medium**	Ground disturbance and mobilisation of sediments / contaminants leading to silt laden or otherwise contaminated runoff entering watercourses.	M-015, M-016, M-019, M-020, M-023, M-070, M-080, M-131, M-132, M-143, M-145, M-149, M-153.	**Low**	**Minor Adverse** (**Not Significant**).
	Medium	Changes to watercourse morphology as a result of works in or near watercourses (for example, associated with earthworks for establishment of temporary construction compounds).	M-019, M-126, M-154, M-156.	**Negligible**	**Negligible** (**Not Significant**).
Public Water Supply **(Surface water (DWPA – River Ugie and associated Scottish Water abstraction serving the Forehill Water Treatment Works)**	**High**	Reduction of water availability to support existing surface water and groundwater abstractions as a consequence of water quantity and / or quality effects. could arise from disturbance for the development of temporary decommissioning access / temporary construction compound establishment, or the leakage / spillage of fuels and chemicals onsite.	M-002, M-008, M-013, M-023, M-069, M-070, M-080, M-082, M-124, M-125, M-128, M-132, M-145, M-146, M-149.	**Negligible**	**Minor Adverse** (**Not Significant**).
Flood risk receptors	No specific receptors	Changes in runoff rates and new flow pathways associated with ground disturbance and the	M-020, M-023, M-080, M-141, M-147, M-150, M-	**Negligible**	**Negligible** (**Not Significant**).

Receptor	Value	Activity and potential effect	Embedded environmental measures	Magnitude of effect	Assessment of residual likely significant effects
	identified in FRA.	development of temporary access tracks and temporary construction compound areas.	151, M-152, M-154, M-157.		

20.12 Summary of effects

20.12.1.1 A summary of the effects arising from the construction, O&M and decommissioning stages of the Project are provided in **Table 20.14** to **Table 20.20.**

20.13 Transboundary effects

20.13.1.1 Transboundary effects arise when impacts from a development with one European Economic Area (EEA) State affects the environment of another EEA State(s). A screening of transboundary effects has been carried out and is presented in Appendix 4B of the Scoping Report (MarramWind Ltd., 2023).

20.13.1.2 Based on the knowledge of the baseline environment, the nature of planned works and the wealth of evidence on the potential for impact from such projects more widely, there are not considered to be any transboundary effects on water resources and flood risk receptors from the Project.

20.14 Inter-related effects

20.14.1.1 A description and assessment of the likely inter-related effects arising from the Project on water resources and flood risk is provided in **Chapter 32: Inter-Related effects**.

20.15 Assessment of cumulative effects

20.15.1.1 A description and assessment of the cumulative effects arising from the Project on water resources and flood risk is provided in **Chapter 33: Cumulative Effects Assessment**.

20.16 Summary of residual likely significant effects

20.16.1.1 There are no residual likely significant effects on water resource and flood risk receptors assessed in the EIA Report Chapter.

20.17 References

Aberdeenshire Council, (2020). *Strategic Flood Risk Assessment: Aberdeenshire Proposed Local Development Plan 2020*. [online] Available at: https://aberdeenshirestorage.blob.core.windows.net/acblobstorage/7c771881-2ca8-4480-9748-16aa84c71301/strategic-flood-risk-assessment-aberdeenshire-pldp-2020.pdf [Accessed: 30 May 2025].

Aberdeenshire Council, (2023a). *Aberdeenshire Local Development Plan 2023*. [online] Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2023/https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2023/ [Accessed: 30 May 2025].

Aberdeenshire Council, (2023b). *Aberdeenshire Council's Scoping Opinion for Offshore Wind Farm Project at MarramWind Offshore Wind Farm.* [online] Available at: https://upa.aberdeenshire.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=RPB0TVCA04U00 [Accessed: 02 July 2025].

Aberdeenshire Council, (2024). *Aberdeenshire Council Pre-Application Advice Report.*

Bing Maps, (2025). *Sitelink*. [online] Available at: https://www.bing.com/maps/ [Accessed: 30 May 2025].

British Geological Survey (BGS), (2011). *User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Groundwater Science Programme, Version 2*. [online] Available at: https://nora.nerc.ac.uk/id/eprint/17084/1/OR11064.pdf [Accessed: 30 May 2025].

British Geological Survey (BGS), (2025a). *BGS Online 625:000 Hydrogeology Map*. [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSHydroMap [Accessed: 30 May 2025].

British Geological Survey (BGS), (2025b). *GeoIndex Sitelink*. [online] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed: 30 May 2025].

Centre of Ecology and Hydrology, (2025). *Flood Estimation Handbook web service*. [online] Available at: https://fehweb.ceh.ac.uk/ [Accessed: 30 May 2025].

Construction Industry Research and Information Association, (2001). *Control of water pollution from construction sites: Guidance for consultants and contractors (C532).* London: CIRIA. [online] Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532 [Accessed: 30 May 2025].

Construction Industry Research and Information Association, (2015). *The SuDS Manual (C753)*. [online] Available at: https://www.calderdale.gov.uk/docs/planning/ciria-c753-the-suds-manual.pdf [Accessed: 30 May 2025].

Environmental Protection Act 1990. (c. 43). [online] Available at: https://www.legislation.gov.uk/ukpga/1990/43/contentshttps://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed: 30 May 2025]

European Commission, (2000). *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy*. [online] Available at: https://environment.ec.europa.eu/topics/water/water-framework-directive_en [Accessed: 30 May 2025].

Flood Risk Management (Scotland) Act 2009. (asp. 6). [online] Available at: https://www.legislation.gov.uk/asp/2009/6/contentshttps://www.legislation.gov.uk/asp/2009/6/contents [Accessed: 30 May 2025].

Marine Directorate – Licensing Operations Team, (2023). *MarramWind Offshore Wind Farm Environmental Impact Assessment – Scoping Opinion*. [online] Available at: https://marine.gov.scot/node/23928 [Accessed: 22 June 2025].

MarramWind Limited, (2023). *MarramWind Offshore Wind Farm Environmental Impact Assessment – Scoping Report*. [online] Available at: https://marramwind.co.uk/scoping-report [Accessed: 02 June 2025].

Meteorological Office, (2025). *Sitelink*. [online] Available at: https://www.metoffice.gov.uk/ [Accessed: 02 June 2025].

Meteorological Office, (no date). *UK Climate Projections (UKCP).* [online] Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index [Accessed: 22 July 2025].

NatureScot, (2025). *SiteLink.* [online] Available at: https://sitelink.nature.scot/home [Accessed: 30 May 2025].

NetRegs, (2025). *Guidance for Pollution Prevention (GPP) documents*. [online] Available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/ [Accessed: 03 December 2025].

Scottish Environment Protection Agency (SEPA), (2003). *Groundwater protection policy for Scotland*. [online] Available at: https://www.sepa.org.uk/media/60033/policy-19_groundwaternov09.pdf [Accessed: May 2025].

Scottish Environment Protection Agency (SEPA), (2008). *Engineering in the Water Environment, Good Practice Guide - Bank Protection Rivers and Lochs (WAT-SG-23).* [online] Available at: https://www.sepa.org.uk/media/150971/wat_sg_23.pdf [Accessed: 02 June 2025].

Scottish Environment Protection Agency (SEPA), (2009). *Engineering in the Water Environment: Good Practice Guide – Temporary Construction Methods (WAT-SG-29).* [online] Available at: https://www.sepa.org.uk/media/150997/wat_sg_29.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2010). *Engineering in the Water Environment: Good Practice Guide – River Crossings (WAT SG-25).* [online] Available at: https://www.sepa.org.uk/media/151036/wat-sg-25.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2011). *Culverting of Watercourses - Position Statement and Supporting Guidance (WAT-PS-06-02).* [online] Available at: https://www.sepa.org.uk/media/150919/wat_ps_06_02.pdf [Accessed: 02 June 2025].

Scottish Environment Protection Agency (SEPA), (2018). *Flood Risk and Land Use Vulnerability Guidance*. [online] Available at: https://www.cairngorms.co.uk/wp-content/uploads/2019/09/CD076-SEPA-Flood-risk-and-land-use-vulnerability-guidance.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2022a). *Position Statement on Planning and Soils*. [online] Available at: https://www.sepa.org.uk/environment/land/soil/ [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2022b). *SEPA's Position Statement on Land Protection*. [online] Available at: https://www.sepa.org.uk/media/159201/ep-054_position_statement_on_land_protection.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2022c). *Technical Flood Risk Guidance for Stakeholders: SEPA Requirements for Undertaking a Flood Risk Assessment*. [online] Available at:

https://www.sepa.org.uk/media/162602/ss-nfr-p-002-technical-flood-risk-guidance-for-stakeholders.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2022d). *Climate Change allowances for flood risk assessment in land use planning.* Version 2. [online] Available at: https://www.sepa.org.uk/media/594168/climate-change-guidance.pdf [Accessed: 02 June 2025].

Scottish Environment Protection Agency (SEPA), (2022e). *Reservoirs Inundation Map*. [online] Available at: https://map.sepa.org.uk/reservoirsfloodmap/Map.htm [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2024a). *Flood Risk Standing Advice for Planning Authorities*. [online]. Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fnckhycrj%2Fflood-risk-standing-advice.docx&wdOrigin=BROWSELINK [Accessed: 02 June 2025].

Scottish Environment Protection Agency (SEPA), (2024b). *Flood Risk and Land Use Vulnerability Guidance*. [online]. Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fht3bsekc%2Fland-use-vulnerability-guidance.docx&wdOrigin=BROWSELINK [Accessed: 02 June 2025].

Scottish Environment Protection Agency (SEPA), (2024c). The Water Environment (Controlled Activities) (Scotland) Regulations. A Practical Guide v9.4 (now replaced by Environmental Authorisations Scotland Regulations as described on the following website) [online]. Available at: Authorisations and compliance | Beta | SEPA | Scottish Environment Protection Agency. [Accessed: 04 December 2025].

Scottish Environment Protection Agency (SEPA), (2025a). *Climate Change Allowances for Flood Risk Assessment in Land Use Planning*: Version 6. [online] Available at: https://www.sepa.org.uk/media/jjwpxuso/climate-change-allowances-guidance_v6.pdf [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025b). *Guidance on Assessing the Impacts of Developments on Groundwater Dependant Terrestrial Ecosystems (GWDTE*). [online]. Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fa1yh0blq%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025c). *Guidance on Assessing the Impacts of Developments on Groundwater Abstractions*. [online] Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fmfzpnjwb%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx&wdOrigin=BROWSELINK [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025d). *Water Environment Hub*. [online] Available at: https://informatics.sepa.org.uk/RBMP3 [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025e). *Water Classification Hub*. [online] Available at: https://www.sepa.org.uk/datavisualisation/water-classification-hub/) [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025f). *Online Flood Mapping available*. [online] Available at: https://www.sepa.org.uk/environment/water/flooding/flood-maps// [Accessed: 30 May 2025].

Scottish Environment Protection Agency (SEPA), (2025g). *Scottish Wetland Inventory*. [online] Available at: https://www.sepa.org.uk/environment/environmental-data/ [Download Data] [Accessed: 30 May 2025].

Scottish Government, (2015). *Scotland's National Marine Plan*. [online] Available at: https://www.gov.scot/publications/scotlands-national-marine-plan/https [Accessed: 30 May 2025].

Scottish Government, (2017a). *The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017*. (SI 2017 282). [online] Available at: https://www.legislation.gov.uk/ssi/2017/282/contents [Accessed: 30 May 2025].

Scottish Government, (2017b). *Planning Advice Note 33: Development of Contaminated Land*. [online] Available at: https://www.gov.scot/publications/pan-33-development-of-contaminated-land/ [Accessed: 30 May 2025].

Scottish Government, (2021). *River Basin Management Plan for the Scotland River Basin District*. [online] Available at: https://www.sepa.org.uk/media/594088/211222-final-rbmp3-scotland.pdf [Accessed: 30 May 2025].

Scottish Government, (2023a). *National Planning Framework 4*. [online] Available at: https://www.gov.scot/publications/national-planning-framework-4/ [Accessed: 30 May 2025].

Scottish Government, (2023b). *Offshore Scoping Opinion for MarramWind Offshore Wind Farm.* [online] Available at: https://marine.gov.scot/?q=node/23928 [Accessed: 10 September 2025].

Scottish Government, (2025a). *River Basin Management Plan for the Scotland River Basin District*. [online] Available at: https://www.sepa.org.uk/media/594088/211222-final-rbmp3-scotland.pdf [Accessed: 30 May 2025].

Scottish Government, (2025b). *Drinking Water Protection Area (DWPA) (groundwater) in the Scotland River Basin District (Map 20 of 22)*. [online] Available at: https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/ [Accessed: 30 May 2025].

Scottish Government (2025c). The Environmental Authorisations (Scotland) Amendment Regulations 2025. [online] Available at: https://www.legislation.gov.uk/sdsi/2025/9780111062319/contents. [Accessed: 3 November 2025].

Standards for Highways, (2025). *Welcome to the DMBR*. [online] Available at: https://www.standardsforhighways.co.uk/dmrb [Accessed: 23 July 2025].

The Private Water Supplies (Scotland) Regulations 2006. (SI 2006 209). [online] Available at: https://www.legislation.gov.uk/ssi/2006/209/contentshttps://www.legislation.gov.uk/ssi/2006/209/contents [Accessed: 30 May 2025].

The Water Environment (Controlled Activities) (Scotland) Regulations 2011. (SI 2011 209). [online] Available at: https://www.legislation.gov.uk/ssi/2011/209/contents [Accessed: 30 May 2025].

Ugie District Fishery Board, (2025). *Ugie District Salmon Fishery Board*. [online] Available at: https://ugie.dsfb.org.uk/ [Accessed: 30 May 2025].

UK Climate Resilience Programme, (2025). *Climate Risk Indicators*. [online] Available at: https://uk-cri.org/ [Accessed: 02 June 2025].

Water Environment and Water Services (Scotland) Act 2003. (asp 3). [online] Available at: https://www.legislation.gov.uk/asp/2003/3/contents [Accessed: 30 May 2025].

20.18 Glossary of terms and abbreviations

20.18.1 Abbreviations

Acronym	Definition
AEP	Annual Exceedance Probability
AOD	Above Ordnance Datum
BGS	British Geological Survey
BS	British Standard
CAR	Controlled Activity Regulations
CEH	Centre of Ecology and Hydrology
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
confl	confluence
d/s	downstream
DWPA	Drinking Water Protection Area
EEA	European Economic Area
EIA	Environmental Impact Assessment
FRA	Flood Risk Assessment
FRCP	Flood Risk and Coast Protection
GIS	Geographical Information System
GPP	Guidance for Pollution Prevention
GWDTE	Groundwater Dependent Terrestrial Ecosystems
ha	Hectares
HDD	Horizontal directional drilling
HMWB	Heavily Modified Water Bodies
km	Kilometres
LNR	Local Nature Reserve
LWS	Local Wildlife Site
m	Metres
MD-LOT	Marine Directorate – Licensing Operations Team

Acronym	Definition
MLWS	Mean Low Water Springs
NNR	National Nature Reserve
NVC	National Vegetation Classification
O&M	Operation and maintenance
OS	Ordnance Survey
PWS	Private Water Supply
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Areas of Conservation
SEPA	Scottish Environment Protection Agency
SMP	Soil Management Plan
SPA	Special Protection Area
SSSI	Site of Scientific Interest
UKCP	UK Climate Projections
UKCRP	UK Climate Resilience Programme
WFD	Water Framework Directive

20.18.2 Glossary of terms

Term	Definition
Alluvium	Material transported by rivers and deposited along its course.
Annual Exceedance	In flood risk management, the likelihood of a rainfall total, runoff or flow rate of a certain magnitude being exceeded each year.
Bund	A barrier, dam or mound used to contain or exclude water (or other liquids). Can refer to a bund made from earthworks material, sand etc. or a metal / concrete structure surrounding, for example, a fuel tank.
Construction Environmental Management Plan	A CEMP is a project-specific plan that sets out environmental management measures to be implemented during the construction stage to minimise adverse environmental impacts. It includes procedures for pollution prevention, waste management, noise and dust control, ecological protection, and compliance monitoring, ensuring that construction activities align with relevant environmental legislation, standards, and commitments identified in the EIA.
Climate Change	A long-term trend in the variation of the climate resulting from changes in the global atmospheric and ocean temperatures and affecting mean sea level, wave height, period and direction, wind speed and storm occurrence.
Conservation Sites	An area of built development having statutory protection under the relevant sections of the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.
Contaminated land	The definition of land meeting the statutory definition of 'contaminated land' is given in Part 2A of the Environmental Protection Act 1990.
Discharge	Release of effluent waste into a watercourse or water body.
Flood Risk Assessment	A technical assessment required under the Flood Risk Management Act (Scotland) 2009 for developments proposed within a flood zones, as defined by SEPA.
In-combination Climate Change Impact	Results when a climate change impact increases or decreases the effect of the Project on an environmental receptor. For example, the biodiversity aspect may identify an effect on an environmental receptor (such as severance of semi-natural woodland) arising from the Project. In addition, the climate hazard (for example, drought) will lead to climate change impact (for example, reduced vegetation growth). The In-combination Climate Change Impact is the exacerbation of the original effect identified by the environmental aspect. Any environmental measure in place to reduce the effect of the severance will therefore need to also consider the future climate conditions.
Listed building	A structure having statutory protection under the relevant sections of the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. Listed buildings are categorised in terms of their importance with A being the highest and C the lowest.
Local Nature Conservation Sites	Local Nature Conservation Sites are non-statutory designations conferred by Aberdeenshire Council and given weight through local planning policy. These sites are selected through an election of criteria (criteria are area dependent) aimed at identifying 'substantive nature conservation value'.
Ordnance Survey	OS stands for Ordnance Survey, which is the national mapping agency for Great Britain. It carries out the official surveying of Great Britain and provides the most accurate and up-to-date geographic data for the country, which is relied on by government, business and individuals.

Term	Definition
Ramsar sites	Areas listed by the UK Government under the Convention on Wetlands of International Importance (the Ramsar Convention 1971).
Scheduled Monument	A site or structure having statutory protection under the Ancient Monuments and Archaeological Areas Act 1979.
Scottish Environment Protection Agency	A non-departmental public body of the Scottish Government, responsible for environmental regulation. This includes ensuring that the environment and human health are protected, and that Scotland's natural resources and services are used as sustainably as possible and contribute to sustainable economic growth.
Scour	A localised sediment erosion feature caused by local enhancement of flow speed and turbulence due to interaction with an obstacle.
Sediment deposition	Settlement of sediment in suspension back to the seabed, causing a localised accumulation.
Site of Special Scientific Interest	Sites notified at the national level under the Nature Conservation (Scotland) Act 2004. They are a series of sites that are designated to protect the best examples of significant natural habitats and populations of species.
Sitelink	An online, map-based library of data sources maintained by NatureScot.
Spatial scope	The area over which changes to the environment are predicted to occur as a consequence of a project.
Spawning	The release or deposition of eggs and sperm, usually into water, by aquatic animals.
Study area	Area where potential impacts from the Project could occur, as defined for each aspect.
Sustainability	The principle that the environment should be protected in such a condition and to such a degree ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.
Sustainable Drainage Systems	Drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental damage.
The Crown Estate Scotland	The public corporation of the Scottish government that is responsible for the management of land and property in Scotland, as owned by the monarch "in right of the Crown".
UK Climate Change Projections 2018	UK Climate Projections 2018 is the most up to date assessment of how the climate of the UK may change over the 21st century, recently updated in 2018. UK Climate Projections 2018 uses climate science to provide observations and climate change projections for the UK and globally until 2100.
Vulnerability	The propensity or predisposition of a system or receptor to be adversely affected. This encompasses the sensitivity of the system or receptor and its capacity to cope and adapt.

MarramWind