

Topic	Potential Construction Impacts	Potential Operational Impacts	Mitigation	Residual Effects
			required, these should be replanted or replaced.	
Ornithology	None	None	None	No significant impacts
Geology & Water Environment	<p>Reduced ground water quality: Limited potential for short term slight deteriorations in water quality due to excavations that would release sediments; use of mechanical plant with associated fuels and lubricants.</p> <p>Flood risk to the development: Appropriate techniques to manage surface water around working areas would be implemented.</p>	None	<p>Routinely checking weather warnings and planning for adverse weather conditions.</p> <p>Storing plant and materials in areas outside areas prone to flooding.</p> <p>Implementing temporary drainage systems to alleviate localised surface water flood risk and prevent surface water ingress to the construction working areas.</p> <p>Prevent obstruction of existing surface runoff pathways.</p> <p>Mitigation to address potential deterioration of water quality (due to excavations, runoff from the works, and use of oils fuels and lubricants) associated with the types of construction activities anticipated shall be similarly addressed by the surface water management and pollution prevention measures stated in Chapter 10: Geology and Water Environment and accompanying Technical Appendix 10.1: Surface Water Management Plan</p>	No significant impacts
Noise	Potential short term noise increase at residential properties within the vicinity of the construction works along the grid connection route.	None	Installation of acoustic barriers or the restriction of working hours per day could be considered, if required.	No significant impacts
Transport and Traffic	Temporary local traffic disruption for the duration of	None	Grid connection construction works should be undertaken in accordance with an agreed	No significant impacts

Topic	Potential Construction Impacts	Potential Operational Impacts	Mitigation	Residual Effects
	<p>the cable laying, including some temporary road closures.</p>		<p>Construction Method Statement and any associated road opening licences, agreements or permits. A Traffic Management Plan including details of any temporary road closures should be agreed with Transport NI prior to the commencement of works to ensure any disruption during the underground cable works will be kept to a minimum.</p>	

Appendix A: Figure Appendix 1: Potential Grid Connection







CARNBUCK WIND FARM

APPENDIX 1.4

POTENTIAL GRID CONNECTION ROUTE

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KEY

-  POTENTIAL GRID CONNECTION ROUTE (UNDERGROUND CABLE)
-  PLANNING APPLICATION BOUNDARY
-  PROPOSED CARNBUCK SUBSTATION LOCATION
-  EXISTING RASHARKIN SUBSTATION



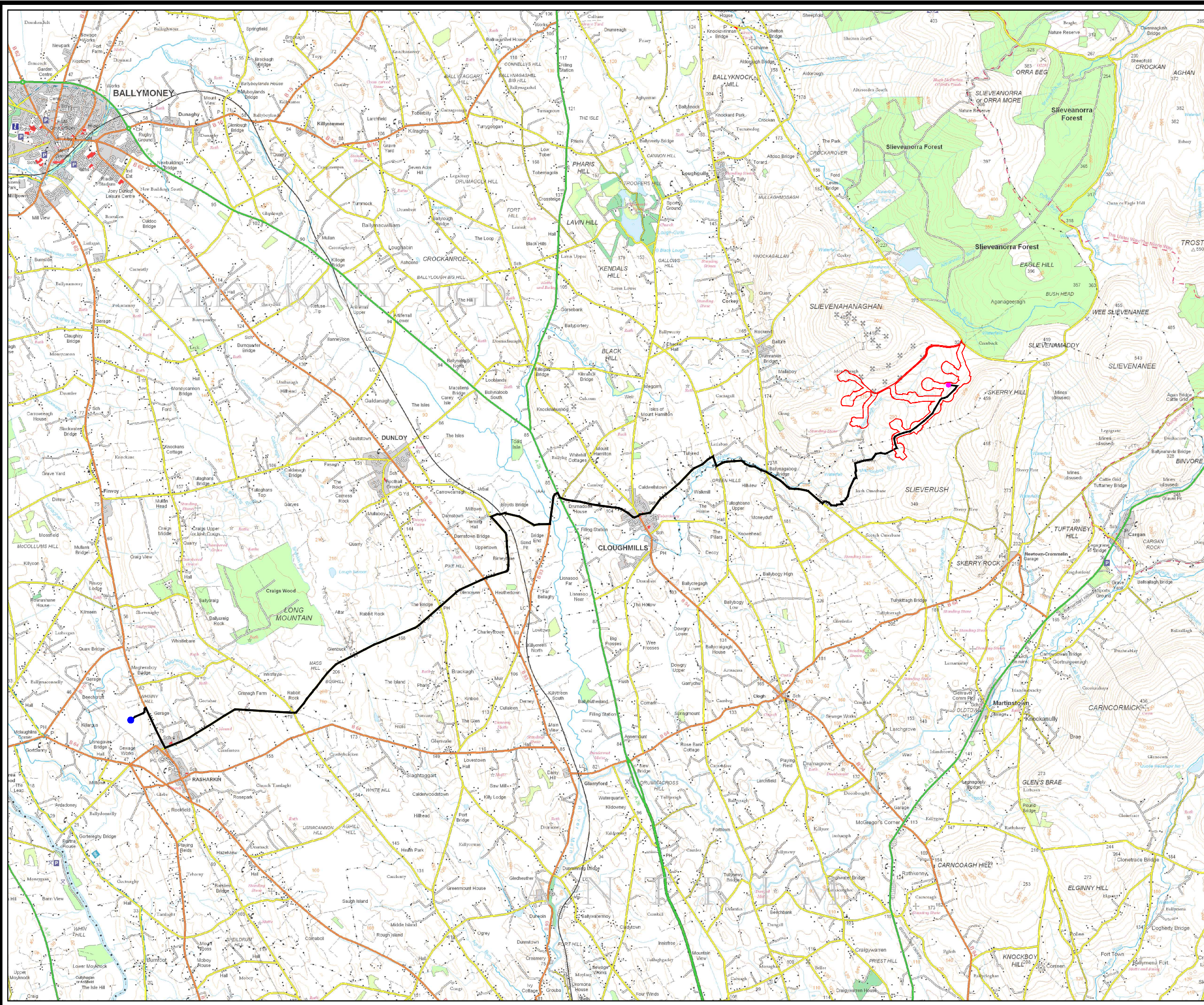
LAYOUT DWG N/A T-LAYOUT NO. N/A

DRAWING NUMBER **03090-RES-GRD-DR-PT-001**

SCALE - **1:75,000 @ A3**

ENVIRONMENTAL STATEMENT 2022

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Appendix B: Heritage Assets Reviewed in Potential Grid Connection Assessment

Ref	Name	Description	E	N	Period	Status	Importance	Impact	Mitigation Notes
06582: 000:00	Irish Omerbane	Flax Mill	309 570	418 950	Post-medieval	Non-designated Industrial Heritage Record	Low	No impact predicted	Site of the flax mill, which does not appear to survive as an extant feature, lies 18m north of Tullykittagh Road and would not be impacted by the proposed grid connection route. A 10m buffer, achieved through fencing and signposts, should be maintained from the site of the mill and construction works.
06577: 000:00	Glenbuck	Bridge	302 630	416 330	Post-medieval	Non-designated Industrial Heritage Record	Low	No impact predicted	Bridge does not survive as an extant feature. The site of the bridge is in any case 10m north of Glenbuck Road and would not be impacted by the proposed grid connection route. No mitigation is recommended.
01339: 121:00	Anticur	Bridge	303 920	418 230	Post-medieval	Non-designated Industrial Heritage Record	Low	No impact predicted	Bridge passes over the road along which the proposed grid connection route will be laid. No impact is predicted and no mitigation recommended.
06573: 000:00	Drumadoon	Creamery	306 550	418 180	Post-medieval	Non-designated Industrial Heritage Record	Low	No impact predicted	Creamery has been replaced by a modern building. Any sub-surface remains would have been removed in the process of constructing the buildings currently in this area. No mitigation recommended.

06568: 000:00	Tullaghban e	Mill - Corn Mill site	308 890	419 260	Post- medieval	Non- designated Industrial Heritage Record	Low	No impact predicted	Site of the mill is located 10m north of Tullykittagh Road within a farmstead which is still in use. It would not be impacted by the proposed grid connection route. No mitigation is recommended.
06569: 000:00	Tullaghban e	Mill - Flax Mill - Corn Mill & Kiln - Beetling Mill site.	309 210	419 090	Post- medieval	Non- designated Industrial Heritage Record	Low	No impact predicted	Asset has been replaced by more modern buildings. It is unlikely to survive as a below ground feature. No mitigation is recommended.
06570: 000:00	Ballynagab og / Tullaghban e	Bridge	309 300	419 110	Post- medieval	Non- designated Industrial Heritage Record	Low	No impact predicted	Site of the bridge is 17m north of Tullykittagh Road and would not be impacted by the proposed grid connection route. No mitigation is recommended.
HB04/1 6/002	KILLAGAN PARISH CHURCH	CHURCH	305 923	418 434	Post- medieval	Grade B Listed Building	High	No impact predicted	The vicinity of the church has been extensively landscaped; any previously existing remains would have been truncated as a result of these works. No mitigation is recommended.
116	Rasharkin	Village of Rasharkin	297 100	413 493	Post- medieval	Historic Nucleated Urban Settlement	Medium	Impact possible in principle	Excavations for the proposed grid connection route would take place within existing roads, footpaths or verges. As these areas have already been heavily disturbed, they are considered of negligible archaeological potential and no mitigation is recommended.

HAGC1		Cottage and outbuilding identified on First Edition OS map of 1830 and Second Edition OS map of 1860. The larger cottage building is shown with an extension on the Third Edition OS map of 1900 but by the production of the Fourth Edition map of 1905, is shown as a much reduced structure. Smaller building located at 296824/413993, larger building at 296810/413981. Any remains of the buildings likely to have been removed during landscaping and construction of driveway for modern house in this area.	296 825	413 993	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2		Cottage located within tree lined enclosure north of Gortahar Road shown on First Edition OS map of 1830. A second structure immediate to the south is shown on the Third Edition OS map of 1900. Both structures remained largely unchanged until the mid to late 20th century by which time they appear to have been much reduced in size as shown on the 1957-1986 OS map and appear to have since been demolished. Area currently an arable field but the structure is not visible on satellite imagery and is unlikely to survive as a below ground feature.	297 578	413 698	Post- medieval	Non- designated	Negligible	No impact predicted	

HAGC3		Cottage located at south of Gortahar Road shown on First Edition OS map of 1830 but no longer depicted by the production of the Third Edition OS map of 1900. Area currently an arable field but the structure is not visible on satellite imagery and is unlikely to survive as a below ground feature.	297 556	413 671	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC4		Small outbuilding located at south of Gortahar Road shown on First Edition OS map of 1830 but not shown on Second Edition OS map of 1860. Area currently characterised by trees. Ploughing activities are likely to have removed any sub-surface remains of the feature which may have existed.	297 703	413 760	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC5		Cottage located at south of Gortahar Road shown on First Edition OS map of 1830 right up to the Fourth Edition OS map of 1905. It is no longer depicted by the time of the production of the 1957-1986 map. Area currently an arable field. Ploughing activities are likely to have removed any sub-surface remains of the feature which may have existed.	297 615	413 701	Post- medieval	Non- designated	Negligible	No impact predicted	

HAGC6		Group of three farm buildings comprising a farm house with outbuildings to the west and north. They are shown on the First Edition OS map of 1830 and remained largely unchanged until the early 20th century when the small western outbuilding was demolished and moved to the south of the farmhouse (as shown on the Fourth Edition OS map of 1905). The buildings remained largely unchanged but were demolished at some stage in the late 20th century. Landscaping for modern house has likely removed any sub-surface remains of these buildings.	298 054	413 953	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC7		School house shown on First Edition OS map of 1830 but no longer depicted by time of production of Second Edition OS map of 1860. Area currently covered in trees and it is unclear whether the structure survives.	298 477	414 244	Post-medieval	Non-designated	Low	No impact predicted	Asset is located outwith the area which would be excavated during construction of the proposed grid connection route.
HAGC8		School house shown on First Edition OS map of 1830 ; it was replaced with a smaller structure by the time of the production of the Third Edition OS map of 1900. The smaller structure is not depicted on the Fourth Edition OS map of 1905. Area currently covered with	298 551	414 274	Post-medieval	Non-designated	Low	No impact predicted	Asset is located outwith the area which would be excavated during construction of the proposed grid connection route.

		trees and it is unclear whether the structure survives as either an above or below ground features.							
HAGC9		Cottage and outbuilding shown on First Edition OS map of 1830 and depicted up to the Fourth Edition map of 1905. Landscaping for the driveway and garden for the modern house is likely to have removed any sub-surface remains of the structures.	298 779	414 269	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC10		Small roadside structure at corner of Glenbuck Road and Mullan Road shown on First Edition OS map of 1830 up until the Fourth Edition OS map of 1905. Small size and proximity to modern road means it is unlikely any below ground remains survive.	299 713	414 194	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC11		Farm building located at south of Glenbuck Road shown on First Edition OS map of 1830 only. Feature is within a field currently used for pasture in an area which has been heavily eroded by livestock. It is unlikely to survive as a sub-surface feature.	300 777	415 285	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC12		Cottage shown on Second Edition OS map of 1860. A modern house stands within the footprint of the structure shown on the First Edition OS map.	300 953	415 369	Post-medieval	Non-designated	Negligible	No impact predicted	

HAGC1 3		Small building north of Glenbuck Road shown on First and Second Edition OS maps of 1830 and 1860. Likely to have been demolished in the late 19th century. Unlikely to survive as a below ground feature as the field in which it is located has been subject to drainage and ploughing activities which are likely to have removed any element of the structure.	301 315	415 589	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC1 4		Farm buildings south of Glenbuck Road shown on Second Edition OS map of 1860. They broadly correspond to present day farm buildings.	301 373	415 573	Post- medieval	Non- designated	Low	No impact predicted	Structures still in use and unlikely to be impacted by the proposed grid connection route. No mitigation is recommended.
HAGC1 5		House shown on First Edition OS map of 1830 at the corner of Glenbuck Road and Bridge Road, which is still present in the present day.	302 692	416 377	Post- medieval	Non- designated	Low	No impact predicted	Structure is still in use and unlikely to be impacted by the proposed grid connection route. No mitigation is recommended.
HAGC1 6		Farm building and small out building north of Glenbuck Road shown on First Edition OS map of 1830 and present on OS map of 1957-1986. Set within an arable field but not visible on satellite imagery. Subsequent ploughing activities are likely to have truncated the building and it is unlikely that it survives as a below ground feature.	302 954	416 623	Post- medieval	Non- designated	Negligible	No impact predicted	

HAGC1 7		Farm building shown on First Edition OS map of 1830 and present up to the production of the Fourth Edition OS map of 1905. Set within an arable field but not visible on satellite imagery. Subsequent ploughing activities are likely to have truncated the building and it is unlikely that it survives as a below ground feature.	302 976	416 646	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC1 8		Farmstead comprising three structures north of Glenbuck Road present on First Edition OS map of 1830. The structures are largely gone by production of 1957-1986 OS map and the area is currently occupied by a modern house, the construction of which is likely to have removed any sub-surface remains of HA18.	303 010	416 673	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC1 9		Farm building and small out building south of Glenbuck Road. Shown on all OS maps up to the Fourth Edition of 1905. Area currently characterised by an arable field. Ploughing is likely to have removed any sub-surface remains of the buildings.	303 034	416 654	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 0		Probable school house shown on First, Second and Third Edition OS maps. Area is currently characterised by a lawn for a modern house. Landscaping works are	303 590	416 944	Post- medieval	Non- designated	Negligible	No impact predicted	

		likely to have removed any sub-surface remains of the feature.							
HAGC2 1		School shown on all historical OS maps up to the 1957-1986 map. Area is currently characterised by modern housing which is likely to have removed any sub-surface remains of the feature.	303 604	416 928	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 2		Farm building in various forms on all historic OS maps up to the 1957-1986 map. Broadly corresponds to the location of farm building in this area.	304 044	417 193	Post- medieval	Non- designated	Low	No impact predicted	Structure is still in use and unlikely to be impacted by the proposed grid connection route. No mitigation is recommended.
HAGC2 3		Farm building shown on First Edition OS map of 1830 only. Area is currently an arable field and ploughing is likely to have removed any sub-surface remains of the feature.	304 051	417 390	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 4		Cottage shown on all historical OS maps. Modern house present in this area which will have removed any sub-surface remains of the historic cottage.	304 040	417 445	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 5		Farmstead shown on all historical OS maps. Corresponds with the present day farmstead in this area and some of the buildings appear to be extant.	304 051	417 564	Post- medieval	Non- designated	Low	No impact predicted	Structures still in use and unlikely to be impacted by the proposed grid connection route. No mitigation is recommended.

HAGC2 6		Cottage shown on all historical OS maps and still present in the modern day.	304 026	417 680	Post- medieval	Non- designated	Low	No impact predicted	Structure is still in use and unlikely to be impacted by the proposed grid connection route. No mitigation is recommended.
HAGC2 7		Small building shown on First Edition OS map only. Not visible on satellite imagery. The building's proximity to the modern road means it is unlikely to survive as a sub-surface feature.	304 298	418 171	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 8		Gravel pit shown on First Edition OS map only. Feature has since been filled in and is no longer appreciable.	304 908	418 079	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC2 9		Approximate location of a building shown on First Edition OS map only. Located within a field used for pasture. It is not visible on satellite imagery and is unlikely to survive as a sub-surface feature.	304 968	418 365	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 0		Gravel pit shown on First Edition OS map only. Feature has since been filled in and is no longer appreciable.	304 942	418 431	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 1		Large building shown on First Edition OS map. Various buildings were located in this area up until the late 20th century. Area is currently a retail outlet, the construction of which will have removed any previously existing historic structures.	305 068	418 565	Post- medieval	Non- designated	Negligible	No impact predicted	

HAGC3 2		First Edition OS map depicts a 'Ruin' in this location but it is not shown on any subsequent mapping. Area is currently used for pasture. No features are visible on satellite imagery and it is unlikely the 'ruin' survives as a below ground feature.	305 510	418 500	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 3		Building shown in some form on all historic OS maps. Area is currently a modern housing estate, the construction of which will have removed any previously existing historic structure.	306 256	418 354	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 4		Gravel pit shown on First Edition OS map only. Feature has since been filled in and is no longer appreciable.	306 389	418 337	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 5		Building shown in some form on all historic OS maps. Area is currently an arable field and ploughing activities are likely to have truncated any below ground remains of the historic structures.	306 386	418 304	Post- medieval	Non- designated	Negligible	No impact predicted	
HAGC3 6		Building shown in some form on all historic OS maps. Area is currently an arable field and ploughing activities are likely to have truncated any below ground remains of the historic structures.	306 462	418 266	Post- medieval	Non- designated	Negligible	No impact predicted	

HAGC3 7		Building located on corner of Main Street and Drumadoon Road. Shown on all historical OS maps and still in use today.	306 696	418 206	Post-medieval	Non-designated	Low	No impact predicted	Asset is still in use as a pub and would not be impacted by the proposed grid connection route. No mitigation recommended.
HAGC3 8		Two structures shown to the south of HA37 shown on all historical OS maps. Area is now a car park which will have removed any sub-surface remains of the structures.	306 702	418 184	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC3 9		Two houses north of Loughill Road shown on all historic OS maps. Both structures remain in the present day.	306 723	418 226	Post-medieval	Non-designated	Low	No impact predicted	Assets are still in use and would not be impacted by the proposed grid connection route. No mitigation recommended.
HAGC4 0		Farmstead north of Loughill Road shown on all historical OS maps. The majority of the structures have been replaced by modern ones, however, the main farm house survives and is still in use.	307 193	418 601	Post-medieval	Non-designated	Low	No impact predicted	Asset is still in use as a house and would not be impacted by the proposed grid connection route. No mitigation recommended.
HAGC4 1		Three farm buildings south of Loughill Road and adjacent to HA40. All three structures survive as shown on the First Edition OS map survive.	307 219	418 593	Post-medieval	Non-designated	Low	No impact predicted	Assets are standing buildings still in use and unlikely to be directly impacted by the proposed grid connection route.
HAGC4 2		Gravel pit shown on First Edition OS map only. Feature has since been filled in and is no longer appreciable.	307 379	418 714	Post-medieval	Non-designated	Negligible		

								No impact predicted	
HAGC4 3		Farm buildings on Lislaban Road shown on all historical OS maps. The buildings have been replaced with modern structures and are no longer extant.	308 279	419 199	Post-medieval	Non-designated	Negligible	No impact predicted	
HAGC4 4		Building at corner of Tullykittagh Road and Corkey Road shown on all historic OS maps and still present albeit in a ruinous state.	309 286	419 104	Post-medieval	Non-designated	Low	Impact possible in principle	Asset is an unoccupied standing building located immediately adjacent to the proposed grid connection route. Impact is possible in principle arising from accidental damage caused by uncontrolled plant movement. Asset to be signposted prior to construction work commencing to avoid any accidental damage.
HAGC4 5		Building shown on First Edition OS map only. Currently characterised by an area of trees. It is unknown whether the feature survives.	309 308	419 069	Post-medieval	Non-designated	Low	No impact predicted	Asset is located outwith the area which would be excavated during construction of the proposed grid connection route.










HAGC4 6		The remains of the walls of Tullahbane school are extant in this location. The school first appears on the Third Edition OS map of 1900.	309 415	419 027	Post- medieval	Non- designated	Low	No impact predicted	Asset is an unoccupied standing building located immediately adjacent to the proposed grid connection route. Impact is possible in principle arising from accidental damage caused by uncontrolled plant movement. Asset to be signposted prior to construction work commencing to avoid any accidental damage.
HAGC4 7		Three farm buildings south of Tullykittagh Road shown on First Edition OS map. Only one building remained by the time of the production of the 1957-1986 map and none are currently depicted. An enclosure within which the buildings were set is, however, still shown on modern OS mapping.	309 698	418 795	Post- medieval	Non- designated	Low	No impact predicted	Asset is located outwith the area which would be excavated during construction of the proposed grid connection route.
HAGC4 8		Omerbane school is shown in this location on the Third Edition OS map of 1900 and is shown up until the production of the 1957-1986 map. Area is currently in use as pasture. It is not clear whether the school survives as either an extant or below ground feature.	310 083	418 710	Post- medieval	Non- designated	Low	No impact predicted	Asset is located outwith the area which would be excavated during construction of the proposed grid connection route.
HAGC4 9		Irish Omerbane settlement. The houses shown on the First Edition OS map are largely still in use today.	310 412	418 496	Post- medieval	Non- designated	Low	No impact predicted	Buildings still in use and would not be directly impacted. No mitigation recommended.
HAGC5 0		Magheraboy farmstead shown on all historical OS maps. Buildings shown on First Edition OS map are still in use today.	311 104	419 023	Post- medieval	Non- designated	Low	No impact predicted	Buildings still in use and would not be directly impacted. No mitigation recommended.

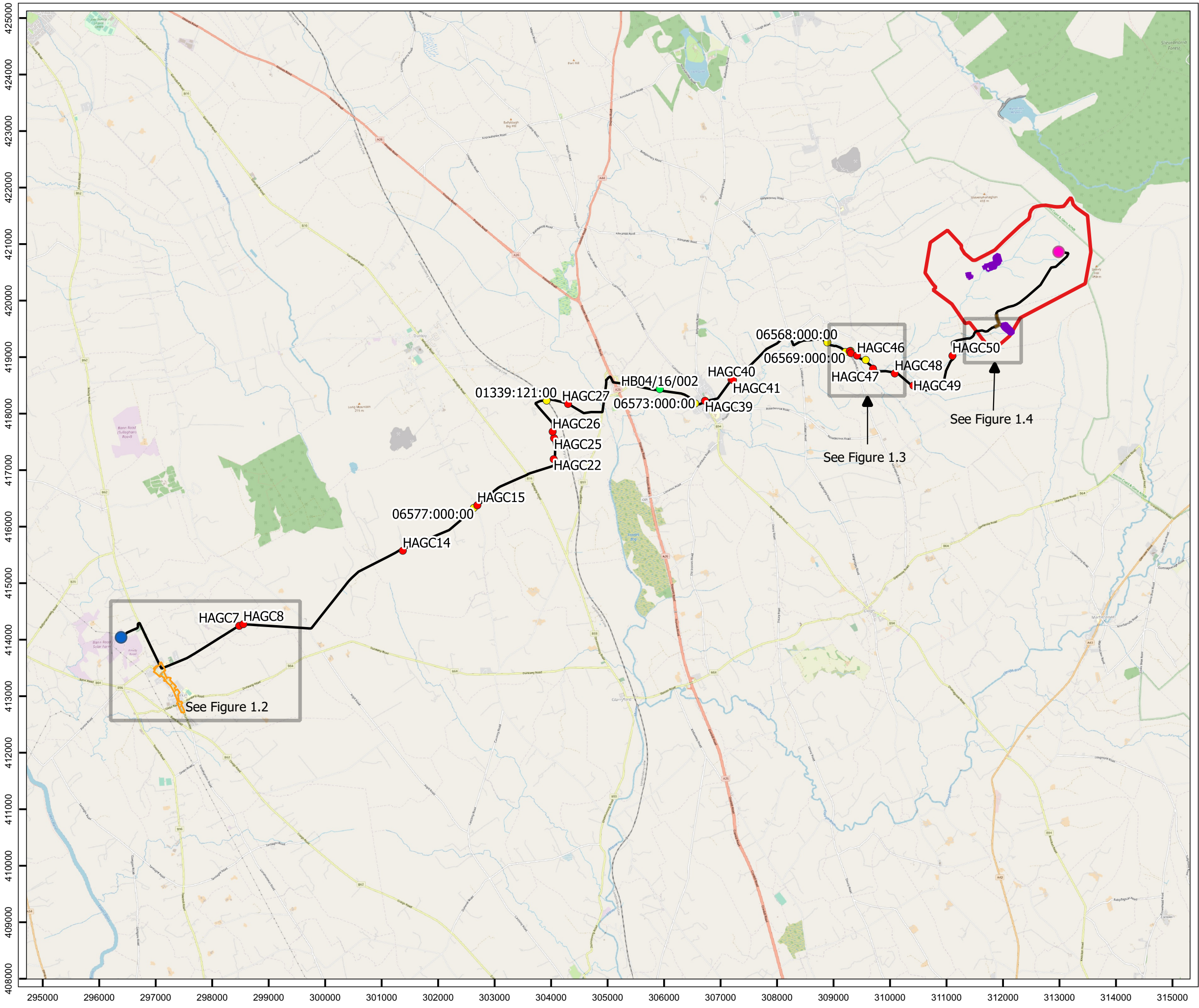
Vicinity of HA12		Area close to HA12, an area of rig and furrow enclosed by a bank, is considered to be of medium potential for previously unknown remains of post-medieval date.	311 922	419 562	Post-medieval	Non-designated	Low	Impact possible in principle	A watching brief of ground breaking works has been recommended for the access track leading to and the vicinity of HA12 during the construction phase of Carnbuck Wind Farm. It is considered these works will be carried out prior to the grid connection works and will sufficiently assess the archaeological potential of the area. Assuming no significant archaeological remains are noted during the watching brief during the construction phase of Carnbuck Wind Farm, no further mitigation is recommended.
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Scotland

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Key

-  Proposed Grid Connection Route
-  Proposed Development Boundary
-  Heritage Assets within the Site
-  Proposed Carnbuck Substation Location
-  Existing Rasharkin Substation copy
-  Grade B Listed Building
-  Grid Connection Heritage Assets
-  Industrial Heritage Record
-  Historic Nucleated Urban Settlement



Industrial Heritage Records, Listed Building and Historic Nucleated Urban Settlement data obtained from Historic Environment Division.

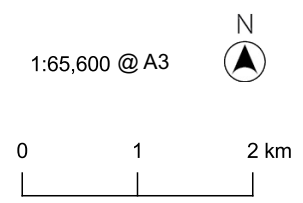







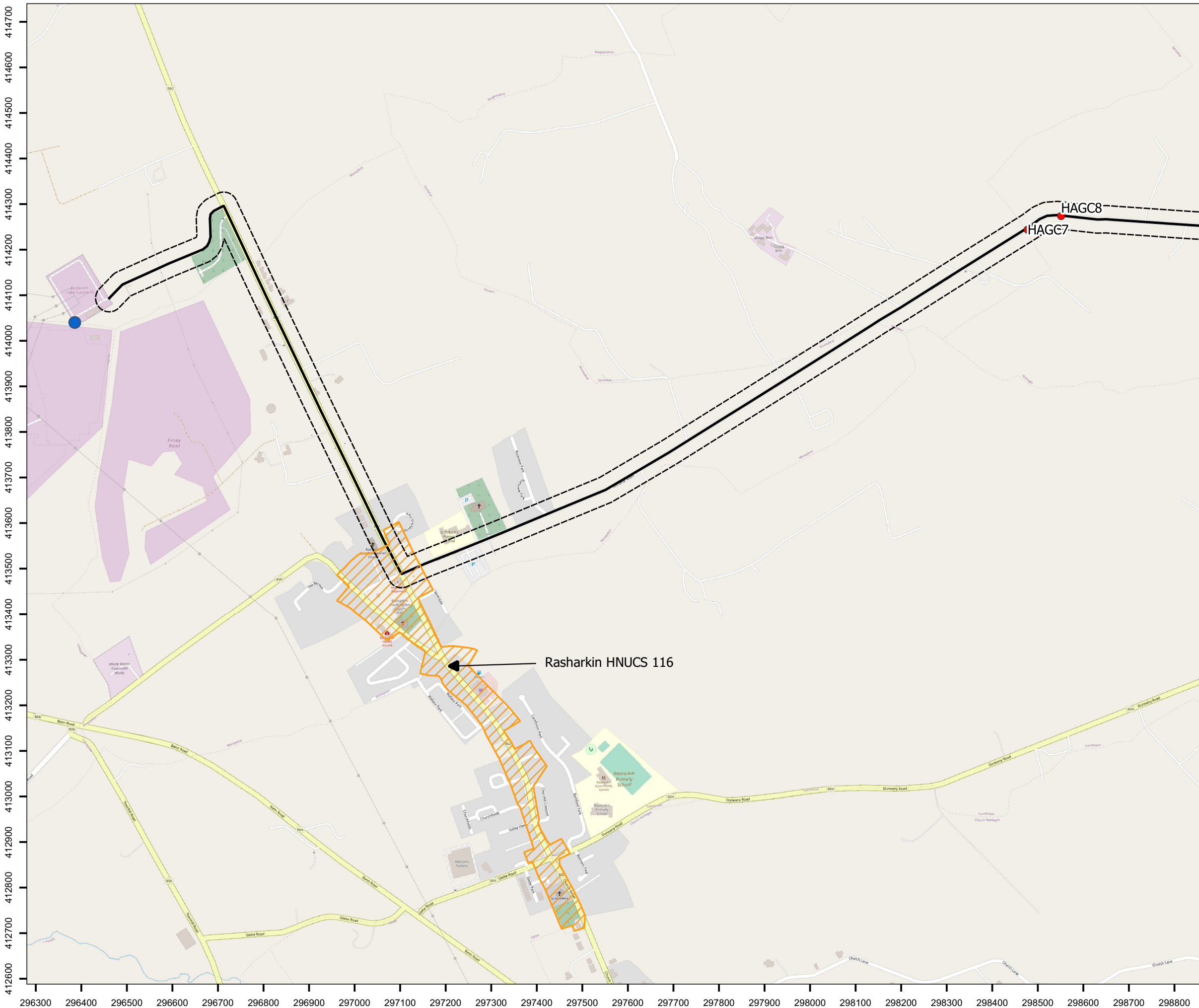
Figure 1.1: Heritage Assets within 30m of Proposed Grid Connection Route

Scotland

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Key

-  Proposed Grid Connection Route
-  30m Study Area
-  Existing Rasharkin Substation copy
-  Grid Connection Heritage Assets
-  Historic Nucleated Urban Settlement



Historic Nucleated Urban Settlement data obtained from Historic Environment Division.

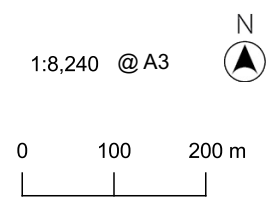






Figure 1.2: Heritage Assets at West of Proposed Grid Connection Route

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Key

-  Proposed Grid Connection Route
-  30m Study Area
-  Industrial Heritage Record
-  Grid Connection Heritage Asset

Industrial Heritage Record data obtained from
Historic Environment Division

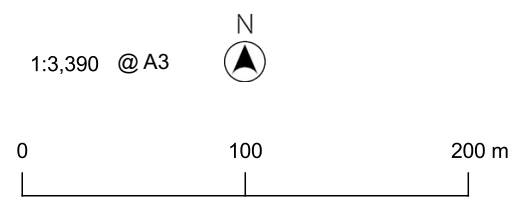


Figure 1.3: Heritage Assets at East of Proposed Grid Connection Route

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Key

- Proposed Development Boundary
- Proposed Grid Connection Route
- 30m Study Area
- Proposed Watching Brief Area
- HA12

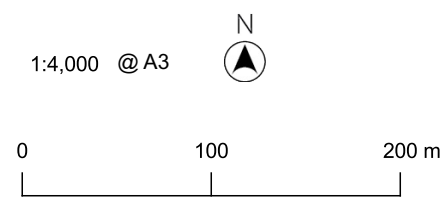
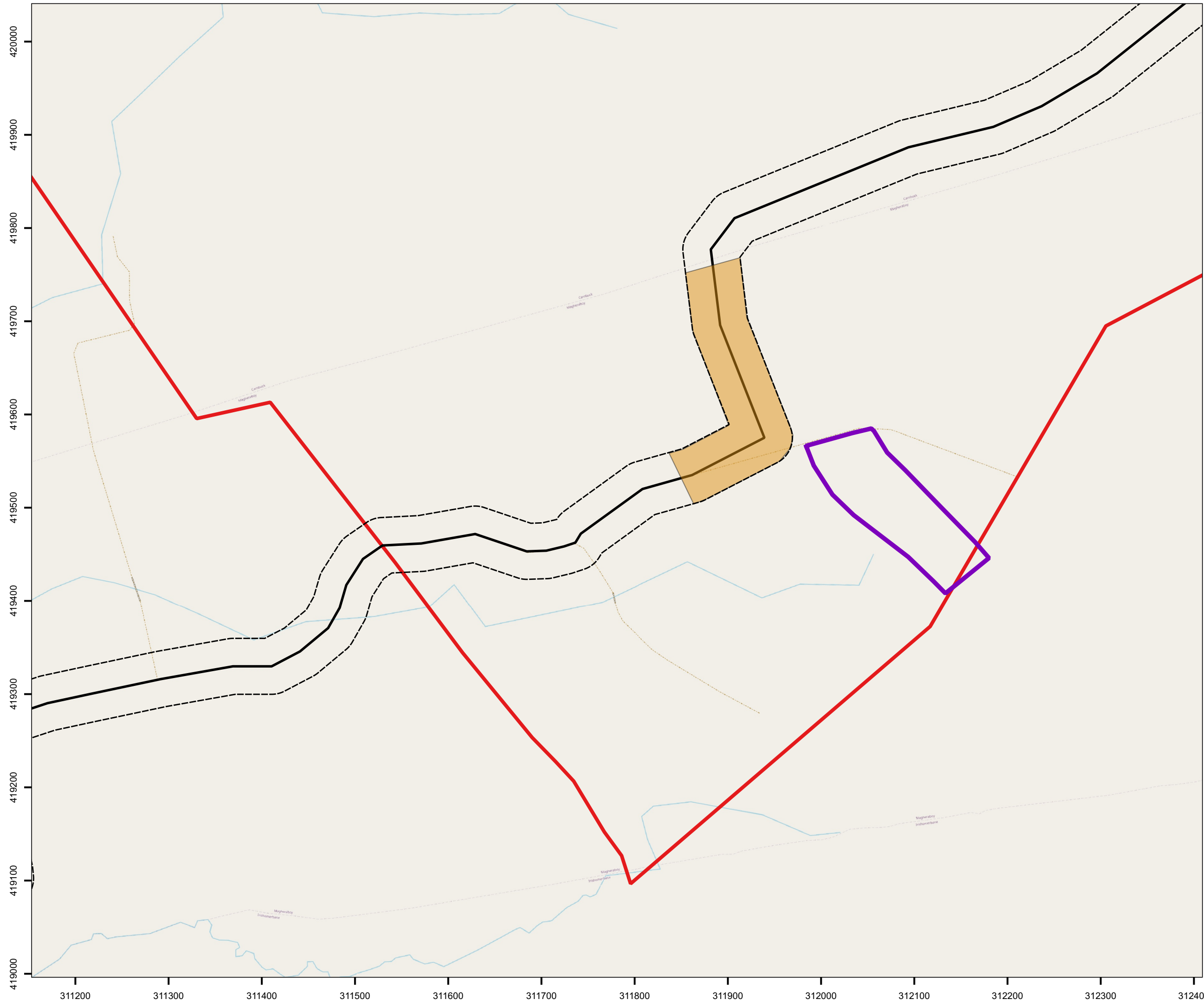


Figure 1.4: Proposed Watching Brief Area in Vicinity of HA12 within the Site

Technical Appendix 1.5

Outline Construction Environmental Management Plan



Outline Construction Environmental Management Plan (OCEMP)

Updated 2022



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1.0 INTRODUCTION

This outline Construction Environmental Management Plan (OCEMP) is submitted by RES Ltd (RES). The principal objective of this document is to provide information on the methodologies to construct and decommission Carnbuck Wind Farm.

As the outline CEMP is being prepared as part of the planning application, RES Ltd are yet to appoint a wind turbine manufacturer or contractors to undertake the electrical or civil engineering works. The contractor(s) appointed to construct the project will prepare detailed method statements to construct the works which will incorporate the details in this outline CEMP.

This outline CEMP sets out the overarching construction management philosophy for the site and provides further details on specific activities that will be undertaken on the site.

The Annexes within the outline CEMP include information / reports produced for the Environmental Statement. To avoid unnecessary duplication they have not been reproduced in this document at this outline stage, but instead are signposted to the relevant location within the Environmental Statement. The final CEMP will include these reports as Annexes.

1.1 *Project Description*

The proposed Carnbuck Wind Farm includes the installation of twelve wind turbines with a maximum height to blade tip of 180m and associated infrastructure associated external electricity transformers, underground cabling, site entrance, access tracks, turning heads, crane hardstandings, control building and substation compound and energy storage containers. During construction and commissioning there would be a number of temporary works including a construction compound with car parking, temporary parts of crane hardstandings and welfare facilities.

The Site infrastructure is detailed in Figure 1.3.



Table 1.1: Outline Project Programme

TASK	CONSTRUCTION MONTH																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Mobilisation & setup construction compound	█	█																
Site entrance and tracks		█	█	█	█	█	█	█	█	█	█							
Crane hardstandings				█	█	█	█	█	█	█	█	█						
Turbine foundations							█	█	█	█	█	█						
Control building & substation							█	█	█	█	█	█						
Cable installation									█	█	█	█	█					
Turbine deliveries												█	█	█	█			
Battery, storage containers, PCSs and transformer delivery												█	█	█	█	█	█	█
Turbine erection													█	█	█	█	█	█
Operational take over																	█	█

1.2 Conditions of Consent

Planning permission for the construction and operation of the Wind Farm is yet to be received. Upon receiving conditions, RES Ltd will provide an updated CEMP to illustrate how applicable conditions will be discharged, aligning current construction methods with relevant legislation and environmental protection practices.

1.3 Community Liaison

Throughout the construction period of the project RES Ltd will maintain an open dialogue with local residents and all other interested parties. RES Ltd will ensure the local community is provided with regular updates on construction progress and upcoming activities through appropriate channels.

A member of staff will be appointed for responsibility of key contact between RES Ltd and the community. This person will be the nominated point of contact for local residents in connection with any issues that may be raised during construction, operation and decommissioning of the wind farm.

Any change to the appointed person shall be communicated to the planning authority and the local community representatives as required.

2.0 GENERAL CONSTRUCTION MANAGEMENT PRINCIPLES

Carnbuck Wind Farm will be constructed in accordance with the Environmental Statement (ES) (2022) prepared during the development stage of the project and in line with good practice outlined in the Scottish National Heritage guidance “Good Practice during Windfarm Construction” - 4th Edition 2019. Mitigation proposed in the individual chapters of the ES are summarised in ES Volume 2 Chapter 15: Summary of Mitigation.



Throughout the development of the project, the aim has been to ensure the design:

- Minimise the extent of infrastructure;
- Avoids sensitive habitats;
- Minimise environmental impacts; and
- Maximise health and safety.

Where appropriate and practicable, local plant and materials will be used to maximise the benefit of the wind farm project to the local economy.

2.1 *Environmental Management and Pollution Prevention*

Specific procedures to ensure that the local environment is protected during construction works are managed through our Environmental Management System Procedures and Policies which is certified to ISO 14001.

2.1.1 *Contractors Requirements*

Details of the environmental management and emergency procedures to be adopted by Contractors during the construction phase are contained within the RES management system procedure Safety and Environmental Requirements of Contractors - 01059R00038. (See Annex 1 of this document.)

2.1.2 *Surface and Ground Water Management*

In accordance with, a sustainable drainage system (SuDS) will be implemented to provide surface water management techniques to mitigate any adverse impact on the hydrology of the site.

The Carnbuck Wind Farm - Surface Water Management Plan details the design criteria and philosophy for the SuDS system. This document is included in Volume 4 Technical Appendix 10.1 of this ES.

The above document also references the design of watercourse crossing, and an inventory of identified watercourse locations.

2.1.3 *Water Quality Monitoring*

Any potential pollution incident on site that may impact water quality will be dealt with in accordance with the Surface Water Management Plan (ES Volume 4 Technical Appendix 10.1).

Water quality monitoring will be undertaken on discharge waters during the construction phase to ensure that the development does not impact on local watercourses and rivers.

A bespoke water monitoring strategy will be prepared and implemented by a specialist consultant, detailing monitoring locations, sampling frequency and the methodology for chemical and biological analyses. Site sensitivity will be considered when deciding the level and frequency of sampling and the proposed monitoring plan discussed and agreed with Water Management Unit prior to implementation. An outline Water Quality Monitoring Procedure is presented in Annex 3.

The exact location of each sampling point will be determined during a walkover survey, and will reflect the point on all relevant controlled waters closest to the proposed active construction areas. Sampling points up- and down-stream of the construction activity will be selected to provide a full profile of the controlled waters.

A baseline report will be prepared following initial pre-construction water quality monitoring. This report will provide details of any contamination concentrations recorded and will be used to depict "uncontaminated background pollution levels" for the site.

In the event of a potential pollution incident, all relevant monitoring points would be visited and re-sampled to determine any changes relative to the baseline data. A report detailing the



findings would be prepared for each incident and recommendations provided for further monitoring and / or requisite mitigation measures.

Following completion of the wind farm construction, all sample points will be revisited, re-sampled and analysed for a full suite of analytical parameters and a further report prepared discussing any impacts upon water quality arising from the construction process.

2.1.4 Foul Water Management

Foul drainage will be provided in agreement with the relevant authorities and most likely involve Foul effluent disposal via chemical facilities with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on site).

2.1.5 Noise Management

The sources of construction noise are temporary and vary in location, duration and level as the different elements of the wind farm are constructed. Construction noise arises primarily through the operation of large items of plant and equipment such as excavators, diesel generators, vibration plates, concrete mixer trucks, rollers etc. Noise also arises due to the temporary increase in construction traffic near the site.

BS 5228-1:2009 'Noise control on construction and open sites; Part 1 - Noise' is identified as being suitable for the purpose of giving guidance on appropriate methods for minimising noise from construction activities.

For all activities, measures shall be taken to reduce noise levels with due regard to practicality and cost as per the concept of 'best practicable means' as defined in Section 72 of the Control of Pollution Act 1974.

It's proposed the following noise mitigation measures will be implemented where appropriate and in line with further guidance from BS 5228-1:2009+A1:2014

- Consideration will be given to noise emissions when selecting plant and equipment to be used on site. Where appropriate, quieter items of plant and equipment will be given preference.
- All equipment should be maintained in good working order and fitted with the appropriate silencers, mufflers or acoustic covers where applicable;
- Stationary noise sources shall be sited as far as reasonably possible from residential properties and, where necessary and appropriate, acoustic barriers installed to further reduce the impact;
- The movement of vehicles to and from site will be controlled; and
- Employees will be instructed to ensure compliance with the noise control measures adopted.

Should it be considered necessary to further reduce noise levels, mitigation measures would be considered and appropriate measures will be undertaken.

There are many strategies that could be employed to reduce construction noise levels; BS 5228-1:2009+A1:2014 also states that the 'attitude to the contractor' is important in minimising the likelihood of complaints and therefore consultation with the local community should occur. Non-acoustic factors such as mud on roads and dust generation, which can also influence the overall level of complaints, will also be controlled as detailed elsewhere in this document.

In the event that noise complaints are received, the RES onsite staff member will contact the complainant and if required, visit the property to discuss the complaint and subjectively assess



the noise levels. If the noise complaint is found to be merited, additional mitigation measures will be adopted.

In the event a resolution cannot be reached between RES and the complainant, the planning authority will be informed in order that they can carry out their own subjective assessment and if required agree any additional mitigation.

All noise complaints will be recorded alongside actions taken to resolve the issue. These records will be available to the Council on request.

2.1.6 Dust Management

The potential issue of dust creation during the works will be weather and season dependant, therefore detailed dust management methods will be subject to the works programme and contractor working methods.

Dust management will be continuously undertaken in accordance with industry best practice to ensure that any local sensitive receptors are not affected by nuisance levels of dust from the works.

The following methods of dust suppression will be considered during the construction phase of the wind farm as required:

- Site tracks to be damped down using bowser or other suitable system;
- Road sweeper to be used to remove loose material from adjacent public roads during construction;
- Cleaning of vehicles, including provision of waterless wheel washing facilities, prior to exiting site onto the public road;
- Soil erosion control measures;
- Speed limits to be put in place to ensure low vehicle speeds;
- Vehicle loads to be covered;
- Damping of dry excavations and cutting activities which generate dust; and
- Sequencing of works to minimise the time that soils are exposed.

2.1.7 Spoil Management Bunds

Excavated peat, topsoil and subsoil are expected to be reused within the works either as part of backfilling or reinstatement operations or used to form landscaping bunds. Materials will generally be stockpiled close to the location of reuse to limit vehicle movements on site. Details of peat and soil stripping at the site and the proposed use and placement of peat, topsoil and subsoil is detailed in ES Volume 4 Technical Appendix 10.4: Peat Management Plan.

2.1.8 On-Site Fuel and Chemical Storage

All fuel and chemicals will be stored within appropriately specified containers and within specifically designed stores / storage areas, and shall include appropriate measures to avoid spillages in accordance with Control of Pollution (Oil Storage) Regulations (NI) 2010.

2.2 Temporary Lighting

Temporary lighting will be required at the construction compound for security purposes and to ensure that a safe working environment is provided to construction staff. In addition, temporary



lighting may be required to ensure safe working conditions at tracks, control building and turbine locations during construction.

All temporary lighting installations will be downward facing and all lights will be switched off during daylight hours and in accordance with any mitigation proposed to avoid disturbance to badgers.

2.3 Peat Slide Risk and Slope Stability

A peat slide risk assessment has been undertaken as part of the Environmental Statement (see ES Volume 4 Technical Appendix 10.3) and the design of infrastructure has considered the findings of the assessment. The recommendations included will be followed.

Prior to construction commencement, detailed method statements will be prepared to address the working methods to be used. Additionally, a “toolbox talk” will be provided by the site management team to highlight possible events causing slope instability and provide guidance on best practice when operating in areas identified as at risk.

2.4 Post Construction Restoration and Reinstatement

During construction of the infrastructure elements (detailed in Section 3 of this report), the vegetated layer will be stripped from the excavation area and stored locally with the growing side up. The remaining organic topsoil and subsoils will be excavated down to formation level, or a suitable stratum, and again will be stored local to the point of excavation, but shall remain segregated to avoid mixing of materials.

Temporary storage areas shall take consideration of all identified buffer areas and be stripped of vegetation prior to stockpiling in line with best working practices. As construction is progressed the effectiveness of the buffer zones will be reviewed and if necessary adjusted. Alternatively the construction procedure may be reviewed and altered or additional control measures put in place.

Post-construction reinstatement will be undertaken as work progresses to minimise the period any organic material is stockpiled. Subsoils shall be used in landscaping and backfilling around structures while the vegetated layer and/or topsoil will be used to reinstate storage and working areas, road verges, drainage swales and embankments. In addition, following the completion of the works, a final inspection of the wind farm site will be undertaken and in circumstances where reinstatement using vegetation and/or topsoil is unsuccessful alternative methods will be considered.

Upon completion of all construction works, all temporary structures and construction equipment will be removed and the granular material that forms the hardstandings will be moved to areas agreed with the landowner or removed from site. Following this, the areas will be backfilled with material stripped and stored during the construction of the wind farm and reseeded as required.

In line with construction best practice and to suit the ground conditions anticipated on site, the track and hardstanding design has endeavoured to minimise spoil generated during construction.

2.5 Traffic Management

Details of the proposed traffic management arrangements will be contained in a Traffic Management Plan (TMP). Any operations not covered by the TMP will be performed in accordance with local and national standards and specifications. All abnormal load movements associated with the project will be performed in accordance with the anticipated Article 78 Permit, using the delivery route shown on drawing in ES Chapter 12: Traffic and Transport.

2.6 Health and Safety Management

The Principal Contractor will be responsible for ensuring that a construction phase health and safety plan is prepared and implemented on site. All work will be carried out in accordance with:



- The Health and Safety at Work etc. Act 1974;
- The Construction (Design and Management) Regulations (NI) 2016; and
- All applicable third party safety guidelines.

2.7 *Environmental*

An Ecological Clerk of Works (ECOW) will be appointed, and will be fully engaged in preparatory works undertaken, with their terms of appointment extended throughout the construction period into the operational period. The agreed terms of appointment, to be agreed with the council, will be provided prior to construction.

The provision of an Archaeologist will be implemented during any excavation works, in agreement with the council, and a Written Scheme of Investigation will be provided and agreed with the council and applied to all applicable areas of work. Mitigation measures will be followed as outlined in ES Chapter 5: Archaeology and Cultural Heritage.

3.0 DESIGN PHILOSOPHY AND CONSTRUCTION METHODS

3.1 *Site Entrance*

The traffic associated with construction of the wind farm will access the site from the Altnahinch Road using the existing Gruig Wind Farm site entrance. Wheel cleaning facilities will be set up at the site entrance to remove mud from the wheels of vehicles leaving the site. Public roads will be inspected daily and a road sweeper will be employed to remove any mud or debris transferred onto the roads from site activities.

3.1.1 *General Construction Method*

The existing site entrance will be prepared in accordance with the design drawings as follows:

- Traffic management to be installed;
- Existing drainage will be maintained;
- Line marking, signage, fencing and vehicle restraint systems required as part of the design will be installed;
- Upon completion of the construction works the site entrance fencing will be reinstated back to its original pre-construction state.

3.2 *Temporary Construction Compounds, Site Tracks and Crane Hardstandings*

3.2.1 *Temporary Construction Compounds*

Temporary construction compound is required for the provision of site offices, welfare facilities and storage arrangements for materials, plant and equipment. There is one temporary construction compound required for the construction phase of the project.

The temporary construction compound will be constructed at the location indicated on Figure 1.3 Infrastructure Layout (ES Volume 3).

Initial welfare provision will be made for use during construction of the access tracks to the temporary construction compound. This will likely be a single unit for use by a small workforce tasked with the enabling works.

The temporary construction compound will be the main compound for the site with welfare facilities at this location.



An area will be assigned for the storage of fuels and chemicals, ensuring any spillage is captured and appropriately dealt with.

3.2.2 Site Tracks

The running width of the tracks will be typically 4.5 m on straight sections, with 0.25 m shoulders, increasing at corners and passing places to accommodate the swept path of turbine delivery vehicles. The track working area will be kept to the minimum required allowing for working area, safe access, drainage and electrical works.

Site tracks will consist of compacted aggregate. Where tracks cross over services such as gas pipelines or electricity cables, they will be designed in consultation with the relevant authority and accordance with their specific requirements.

A number of track designs may be utilised on site which will be determined during detailed design, dependent on the ground conditions encountered on site and include:

- Typical track founded on suitable load bearing strata;
- Floating Track, laying a suitable membrane on existing ground level and constructing off that layer;

Track drainage will be incorporated within the design in accordance with sustainable drainage design principles. Where the road alignment crosses existing drainage channels, crossings appropriate to the location will be designed in accordance with the relevant guidelines.

A buffer zone in accordance with the relevant guidance from NIEA will be maintained around watercourses shown on in the Surface Water Management Plan (ES Volume 4 Technical Appendix 10.1). The exceptions to these buffers will be where the existing tracks are located within the buffer zone and where there are watercourse crossings. Site personnel will be made aware of the buffer zones through the site induction and specific tool box talks.

Typical Track

Typical track construction may be used in areas identified where the thickness of soft soils is low, and the underlying layer has adequate load bearing properties. This track system will likely consist of a suitable capping layer and then a suitable running layer.

3.2.3 Crane Hardstandings

The main crane hardstanding area is anticipated to be 55m x 35m. There may be additional temporary hardstanding areas required for the erection of the main crane, lay down of materials and turbine components.

The main crane hardstanding area will be uncovered for the operational lifetime of the wind farm in line with good practice outlined in the Scottish National Heritage guidance "Good Practice during Windfarm Construction" - 4th Edition 2019. Any temporary crane hardstanding elements will be reinstated post construction.

All crane hardstandings will consist of a compacted stone structure bearing directly on a suitable formation strata.

3.2.4 General Construction Method

Where competent soils exist close to the existing ground level the following construction method will typically be followed:



- Track and crane hardstanding alignments will be established from the construction drawings and marked out with ranging rods, timber posts or steel pins;
- Track corridors and crane hardstanding locations shall be pegged out 500 - 1000m in advance of operations;
- Where possible, upgraded access tracks will re-use the structure of the existing track to reduce construction requirements;
- Drainage swales will be excavated adjacent to the tracks where required. Surface water runoff will not be allowed to discharge directly into existing watercourses but will be routed through a Sustainable Drainage System (SuDS);
- A surface water cut off ditch may be installed on the slope above the earthworks footprint where achievable given the topography;
- Material will be excavated and stored;
- Cut track construction will be used where shallow soils are identified. This cut track system will likely consist of a suitable layer of crushed aggregate, either spread by a dozer or placed by hydraulic excavator, prior to being compacted in layers by vibratory rollers. If ground conditions dictate, a geotextile membrane will be applied;
- Crane hardstanding construction will follow the same construction method as cut track;
- Floating track construction is to be adopted as shown on ES Figure 1.3 Infrastructure Layout, where the ground conditions dictate. This system involves installing a geogrid membrane directly onto the organic vegetated layer and placing layers of suitable stone and additional geogrid layers (if required by the design) above;
- Where the road alignment crosses existing drainage channels, crossings appropriate to the location will be designed in accordance with the relevant guidelines;
- Depending on depth and type of material, adjacent slopes are anticipated to be between 1:1 to 1:3.
- Post-construction reinstatement shall be in line with the details of Section 2.5.

Where the load bearing properties of the underlying soils are determined to be insufficient, ground stabilisation may be carried out to provide adequate bearing capacity of the formation level. Due to the variable nature of the ground at the site, specific construction methods shall be selected at detailed design stage in consultation with specialist contractors. Such methods may consist of:

- Compaction of the existing in situ soils;
- Lime/cement stabilisation of the existing in situ soils; or
- Installation of stone or concrete columns to provide adequate support.

3.3 Turbine Foundations

Foundations will be designed as a reinforced concrete slab, in accordance with the relevant design standards, specific turbine supplier load information and ground conditions. Due account will be taken of guidance provided in appropriate codes and standards such as Eurocodes, British Standards and other specialist design documents.



Due to the anticipated load bearing capacity of the near surface soils, gravity base turbine foundations are expected to be used to support the wind turbine.

3.3.1 General Gravity Base Construction Method

The gravity base foundation general construction method would generally be as follows:

- A surface water cut off ditch may be installed on the slope above the earthworks footprint where achievable given the topography;
- The topsoil will be excavated and stored to one side for reuse during the landscaping round the finished turbine;
- Excavation will be undertaken to competent material. Excavated subsoil material may be stockpiled temporarily adjacent to the excavation for later use as backfill or stored elsewhere on site. Temporary & permanent drainage shall be installed at the same time as the excavated works;
- Where competent material is lower than the required formation level the foundation will likely be over-excavated to competent material and compacted engineering fill placed to the required level;
- Where excavation is required to extend below the water table or in material which does not drain freely, temporary pumping will be employed to keep the excavation dry. Water pumped from an excavation shall be adequately treated in line with the SuDS philosophy, before being discharged directly into any watercourse;
- A layer of concrete blinding will be laid directly on top of the newly exposed formation, finished to ensure a flat and level working surface;
- Steel reinforcement, the turbine anchorage system and cable ducts will be fixed in place and formwork erected around the steel cage;
- Concrete will be placed using a pump, or other suitable device, and compacted using vibrating pokers;
- Following the settling process, the foundation will be backfilled with suitable material, and landscaped using vegetated soil layer set aside during the initial excavation; and
- A gravel path will be built leading from the access track or crane hardstanding to the turbine door or access steps and around the turbine for maintenance.

3.4 Turbines and Turbine Transformers

3.4.1 Turbines

The turbine will typically be supplied with a light grey semi-matt finish and installed with a height not exceeding 180m measured from ground level to the blade tip in the vertical position.

The turbines shall not carry any symbols, logos or other lettering except where required under other legislation. However, RES proposes to add turbine numbers to the base of each tower to aid service engineers during the operational phase of the wind farm.

In line with Health and Safety best practice, turbine manufacturers have indicated a preference to locate a passive infra-red (PIR) detector and light above each turbine door. It should be noted



that this lamp will not be permanently lit and would only be switched on by the PIR when personnel approach a particular turbine.

Specific locations for the turbines are as per ES Figure 1.3 Infrastructure Layout'.

3.4.2 Turbine Transformers

Depending on the model of turbine finally chosen for the site, turbine transformers will either be placed internally, or externally in close proximity to the turbine.

Oil cooled transformers will be supplied full of oil and will not require topping up on site. The transformers will be sealed and will be inspected for any damage prior to offloading. Air cooled or cast resin transformers do not require cooling oil.

Exterior transformers will be located within enclosures which shall be locked, accessible by trained and authorised personnel only, and displaying appropriate warning signs.

3.4.3 General Turbine Erection Method

The following general steps will be undertaken to erect the turbines on site:

- Turbine components will be lifted by adequately sized cranes (one main crane and one smaller tail crane) and positioned on the foundations/ other turbine sections until the turbine is erected;
- Upon completion of the erection all fasteners will be tightened and the internal fit out of the turbines undertaken;
- The turbines will then be connected to the wind farm substation; and finally
- Turbine testing and commissioning will be undertaken before the turbines will be handed over as complete.

3.5 Control Building and Substation Compound

Cables will transfer power from the wind turbines to the substation compound and control building before being transferred to the National Grid. The Control Building and Substation Compound is shown on ES Figures 1.5 to 1.7.

The control building has been designed, sized and positioned to be sympathetic with the surroundings. The building typically contains the following rooms; control room, switch room, SCADA room, and equipment store and welfare facilities.

The detailed design of the foundations for the building will be based on the Site Investigation reports and building requirements, and will ensure loads associated with the building are transferred to the appropriate bearing layer in the sub-surface.

The building will likely consist of masonry/block cavity.

Foul drainage will be provided in agreement with the relevant authorities and most likely involve Foul effluent disposal via chemical facilities with periodic tankered removal by a licensed waste haulier for licensed offsite disposal (i.e. there shall be no emission on site).

Communications to the site is anticipated to be provided via direct cable connection with the service provider.

3.5.1 Sub Station Finishes



The superstructure will consist of cavity wall construction with external cladding in some sections and a traditional pitch roof construction spanning front to back. Final building finishes will be widely in keeping with the local area where possible.

3.5.2 General Construction Method

The control building and substation compound will generally be constructed in accordance with the following:

- A surface water cut off ditch may be installed on the slope above the earthworks footprint where achievable given the topography;
- The plan area of the substation control building and compound will be set out and the topsoil stripped and removed to a temporary stockpile;
- The building foundations will be excavated and concrete poured;
- The building structure will be constructed from the foundations, in accordance with current practice and specific designs; and
- The internal fit out of the building including installation of services will be completed.

3.6 Cabling Works

All electricity and other service cables between the turbines and the substation will be placed underground.

The detailed construction and trenching specifications will depend on the ground conditions encountered but typically cables will be directly buried inside a trench, except at road crossings when cables will be ducted.

Specific cable layout plans will be provided prior to construction.

3.6.1 General Construction Method

The following construction method will typically be used:

- Trenches will be excavated and a suitable bedding material placed to lay the cables upon. The ground is trenched typically using a mechanical digging machine;
- The cables shall be laid directly onto the bedding material;
- The trench will be backfilled and compacted with suitable material up to the required level and finished with a layer of topsoil to reinstate the trench;
- A suitable marking tape is installed between the cables and the surface; and
- The cables are terminated on the switchgear at each turbine and the substation.

3.7 Battery Storage

The battery storage compound will utilise the proposed temporary construction compound adjacent to the substation. The battery storage layout is detailed in Figure 1.8a

3.7.1 General Construction Method

The Battery storage compound will generally be constructed in accordance with the following:

- Temporary construction compound will be prepared for the suitability of battery storage components;



- Lithium ion batteries will be imported to site in fully sealed modules;
- The lithium ion batteries will be enclosed in steel ISO shipping containers, mounted on concrete foundations; and
- Cabling shall be installed between the batteries, PCSs and Substation.

4.0 OUTLINE DECOMMISSIONING PLAN

Prior to decommissioning, a detailed site restoration scheme will be provided to the council for written approval.

Outlined in the following sections are the general procedures to be followed in the decommissioning of the wind farm based on current knowledge.

4.1 *Site Track & Hardstanding Areas*

New site tracks and hardstanding areas constructed during development of the wind farm will be reinstated to the approximate pre-wind farm condition, unless otherwise agreed with the Landowner and/or Local Planning Authority. Areas to be reinstated would be treated in the following way:

- The material used to construct the tracks will be taken up and removed to areas identified in the site restoration scheme;
- The areas will be backfilled with suitable fill material, covered with topsoil and reseeded as required;
- Backfilling of access tracks will be carefully planned to avoid unnecessary plant and equipment movement on freshly reinstated land; and
- Any tracks which were upgraded during the development of the wind farm would be left unchanged from the conditions used during the operation of the wind farm.

4.2 *Wind Turbines*

The decommissioning of the wind turbines will be the reverse of the erection process involving similar lifting plant and equipment:

- Wind turbines will be disconnected from the cabling and internal components stripped and taken off site;
- It is anticipated that the turbine nacelle would be taken down and loaded straight onto the back of transport vehicles and removed from site for reconditioning or scrap; and
- The turbine towers and blades would be taken down and either transported directly off site or broken down into smaller components if required.

4.3 *Turbine Foundations*

It is widely accepted that there is no appreciable effect on the local environment from buried reinforced concrete structures left in-situ due to the inert state of concrete. Therefore the foundations will be reinstated as follows:

- Following the removal of the wind turbine, topsoil and subsoil will be excavated to expose the top of the foundation and stored for reuse;



- The reinforced concrete foundation will then be broken out to an agreed depth below existing ground level and the material will be removed as identified in the site restoration scheme; and
- The excavation will be backfilled with suitable fill material, covered with topsoil and reseeded as required.

4.4 Control Building and Substation Compound

The control building and substation compound will be decommissioned by disconnecting and dismantling all the surface plant. Solid structures such as the building and equipment plinths will be demolished and the foundation will be removed to an agreed depth below ground level. Ducting and cabling that is within the depth to be cleared will be removed.

The fence surrounding the compound will be removed and the area landscaped so it can revert to its original state.

4.5 Electrical Equipment

The electrical equipment will be decommissioned in the reverse of the installation method involving similar plant. The equipment will be dismantled, removed from site and disposed of in an appropriate manner.

4.5.1 Cabling

Cables will be removed if it is deemed that removal would not be detrimental to the local environment. If removed, trenches will be backfilled with material removed during the cable removal process, covered with topsoil and reseeded as required.

4.6 Battery Storage

Battery modules will be removed from site fully intact and sent for recycling. The battery enclosures, PCSs and cables will be recycled locally at an authorised metal recycling centre.

5.0 RECORDS

Records, as-built drawings, specifications, operational maintenance manuals and residual risks will be collated and filed in the Project Health & Safety file based upon the requirements of CDM Regulations (NI) 2016.





**Safety and Environmental Requirements for Contractors on all
activities (RSWP 005)**

Revision History

Issue	Date	Nature and Location of Change
1-13		Previous revision histories to this document can be found in revision 13
14	12/09/15	Document completely redrafted as part of lean review/ FFF process, to incorporate previous departmental 'Safety Requirements' versions and Environmental Requirements of Contractors document. Reviewed extensively by all the UK Geographic Business Units during this process and this document now replaces; RSWP 011 Safety Responsibilities of Contractors Construction (Eire) 01059R00039 RSWP 022 Responsibilities of Contractors Working on RES Offices 01059-000095 RSWP 027 Safety Requirements of Contractors Generation 01059-00065 RSWP 031 Safety Requirements of Contractors Development 01059-001264 Environmental Requirements of Contractors 01226R00016
15	19/08/16	Document title changed by removing RWSP 005 from start and putting at end; Safety & Environmental Requirements for Contractors on all activities (RSWP 005)

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1 PURPOSE

The purpose of this document is to promote; Health, Safety, Environment, Safety Leadership and Sustainability of our Contractors, Consultants, RES employees and the general public by setting out the minimum expectations when working on RES managed contracts.

This document shall be supplied to all Contractors and Consultants tendering for any contracts relating to works or services on any RES site or office, it shall be read carefully and its receipt acknowledged in writing in connection with a specific Contract. No variation shall be permitted without the express permission of the appropriate RES Manager responsible for the works / services; eg. Project Manager, Construction Site Manager, Asset / Site Manager or Office / Facilities Manager, etc.

This document shall be read in conjunction with the relevant Health and Safety (& Environmental - where applicable) Plan for the location of the works.

2 SCOPE

It should be noted that this document and the References quoted below **do not** cover all possible site activities and it therefore remains the Contractor's / Consultant's responsibility to ensure that their works are carried out in a safe and environmentally responsible manner which complies with **ALL** relevant legislation current at that time. All work activities with significant risks are to be covered by an appropriate written risk assessment and work instruction / method statement that has been reviewed by the appropriate RES Manager prior to works commencing.

3 RESPONSIBILITIES & REQUIREMENTS

Contractors & Consultants shall comply with all relevant requirements appertaining to their contracted works. Throughout this document any references to Contractor(s) shall also apply equally to Consultant(s) and whilst RES are not typically identified, this does not absolve RES employees from following the same site rules and requirements as our Contractors or Consultants. Where specific training requirements or qualifications are required, Contractors may provide evidence of alternative training subject to it being equivalent to / better than, the RES defined minimum requirements.

4 RES RESPONSIBILITIES

4.1 Controlling Documentation

RES shall provide the Health, Safety & Environmental Plan (Pre-tender and construction phase), Project Quality Plan and Site Waste Management Plan. RES shall review all Safe Systems of Work for **all significant risk** activities; including Risk Assessments, Method Statements and Permits to Work - **work will not be permitted without these being in place**. HV Electrical cable and system isolations and documentation shall be controlled through RES Senior Authorised Person (SAP) or RES nominated SAP.

RES shall audit all aspects of the management of health, safety, quality and environment on site and may carry out appropriate surveys, inspections, tours and sampling at any time. RES may carry out their own accident investigation if deemed necessary to ensure that correct preventative measures are put in place.

4.2 On Site Responsibilities

Safety requirements & rules shall be displayed on site and readily available for all employees to see. RES shall provide the RES site induction or RES on-line induction (to be advised by RES) prior to visiting, starting works & at refresher intervals and provide support to those who have difficulty with the English language to ensure that all site attendees can demonstrate that they understand the site rules & instructions.

RES shall provide prompt information that could affect health & safety of workers, and/or other 3rd parties, members of the public, ensuring adequate steps to prevent harm to livestock on site, maintenance of site fencing, boundaries & keeping gates closed.

RES shall facilitate agreements on interface responsibilities between other parties - within procedures and appropriate documentation controls, including regular meetings / liaison with RES staff, employees and other contractors to identify and discuss hazards with work activities and how they could affect others.

Unaccompanied site visits will be at the discretion of the RES Site Manager. First Aid facilities and provision of first aid is the responsibility of the contractor unless agreed otherwise, RES facilities will be available for use in case of emergency.

4.3 Wildlife

RES Site Manager shall inform Contractors of any constraints or work time restrictions due to the protection of wild life, i.e. nesting sites, habitat issues. If unexpected wildlife is encountered during work activities, i.e. bird nest / badger sett etc, work is to be temporarily suspended and the Site Manager informed. No work shall take place until clearance has been given by RES to resume.

5 CONTRACTOR / CONSULTANT RESPONSIBILITIES & REQUIREMENTS

5.1 Controlling Documentation

Contractors shall provide the Health & Safety management & site controls applicable to employees, visitors, third parties, Quality management & associated documentation for services, equipment, materials, products, Environmental management & associated documentation for services, equipment, materials, products. Contractors shall conform to the Project; Health, Safety (& Environmental) Plan, Quality Plan and Site Waste Management Plan. Contractors shall provide the Inspection & Test Plan appropriate for their works and any associated documentation required to support conformance to contract specification.

Safe Systems of Work for **all significant risk** activities shall be provided, including; Risk Assessments, Method Statements and Permits to Work - **work will not be permitted without these being in place.**

5.2 On Site Responsibilities

Safety requirements & rules shall be displayed on site and be readily available for all employees to see, with delivery of toolbox talk records provided to RES. Contractors shall ensure that all site attendees complete a RES site induction or have undertaken a RES on-line induction (to be advised by RES) prior to visiting, starting works & at refresher intervals - including provision of support to those who have difficulty with the English language; everyone attending site must demonstrate that they understand the site rules & instructions. Contractors shall provide safety training & skills competency records (nationally recognised training bodies) - including matrix of training requirements and supporting certificates, CITB cards etc for all employees.

Contractors shall provide communication devices for contact and emergencies; to suit site requirements (mobile phone signals may not work), provision of prompt information that could affect health & safety of workers, and/or other 3rd parties, members of the public.

Implementing adequate steps to prevent harm to livestock on site, maintenance of site fencing, boundaries & keeping gates closed. A fencing & gates / gated scheme **shall** be developed and agreed with the landowner, including location, temporary or permanent. Agreeing interface responsibilities between other parties, defining within procedures and appropriate documentation controls.

Undertake regular meetings / liaison with RES staff, employees and other contractors to identify and discuss hazards with work activities and how they could affect others. Agreement to start works on site is through the consent of the RES Site Manager. When required, work instructions and risk assessments are to be provided to all employees undertaking the work who fully understand and agree with the requirements. Keep adequate records for site works including nature of work, duration, etc and making available to RES as required.

Visitors to be accompanied on site **at all times** by a fully inducted employee, (visitors shall receive a full induction if visiting site more than once and unaccompanied site visits shall be at the discretion of the Site Manager).

Contractors shall appoint a Competent Safety Representative (responsible for all safety issues for their company inc. electrical safety rules if applicable) and Site Supervisor(s) normally (black coloured hard hat required on construction sites) trained to nationally recognised standards, E.g. SSSTS, IOSH Managing Safely, Black / Gold CITB Card.

5.3 Site Accommodation

Temporary electrical systems are to be designed, inspected & tested by the Contractor, who shall provide the forms of Completion, Inspection & Testing required by the Wiring Regulations BS7671. Housekeeping relating to accommodation, storage and vehicles is to be of a high standard including regular cleaning. Areas for storage of plant, equipment, materials along with rules for use and access are to be in agreement with / designated on site by the RES Site Manager - Contractor shall provide all details of site requirements and what is being used on site (including any reinstatement of area after use).

All access tracks and entry routes are to be kept free of obstacles and well maintained - this includes controlling dust. Petrol or diesel engine plant is not to be used within buildings unless exhaust gases are piped to open air or an alternative approved. LPG is only to be used in accordance with legislation.

5.4 Site Security

Contractors **shall** use designated means of access and egress on the site, daily site records of employees **shall** be collected to aid security in the event of a fire or other emergency. Where security is used on site it **shall** be the duty of the gate / guard person to ensure vehicles and people are logged and have undergone induction.

5.5 Safety Audit(s)

Contractors shall make available all information and records as required by an auditor in the undertaking of their activities. The Contractor **shall** co-operate at all times in the undertaking of such health, safety, quality or environmental related audits and follow up actions. The Contractor **shall** undertake their own audits and inspections as agreed by both parties. Any actions identified from the audits shall be planned, communicated and agreed to rectify the issue(s).

5.6 Alcohol, Drugs & Smoking

The supply and consumption of alcohol & drugs is **prohibited** on site. Any misbehaviour at work such as; being under the influence of alcohol or drugs, shall be classed as gross industrial misconduct. Accident investigation on site may require the need for alcohol or drug tests to be undertaken by the employer.

Any person prescribed medication by their GP must be fit for work. The Site Manager needs to be informed of such instances and arrangements made for storage of their medication on site. A record of their capability for work may also be required.

5.7 First Aid

First aid facilities and provision of first aid is the responsibility of the contractor unless agreed otherwise. All First Aid treatments must be reported and logged, no matter how small. Notification of first aid arrangements **shall** be displayed and employees and other 3rd parties **shall** be informed of the arrangements.

5.8 Accident Reporting & Investigation

All accidents **shall** be reported and recorded in their company and the RES site accident book / recording system. The RES Site Manager **shall** be informed of all accidents, incident and near misses. The RES accident procedure shall be followed. Any notifiable accidents, specified injuries or conditions, or dangerous occurrences which are reported by the contractor under RIDDOR regulations, **shall** be reported without delay to the RES Site Manager.

The Contractor **must** encourage near miss incident and hazard reporting, active recognition and reporting is a key function in Safety Leadership and a mandatory responsibility of everyone on site. The Contractor's Health and Safety Advisor is to carry out a full investigation of all accidents and issue a report to RES.

5.9 Lone Working

A risk assessment **shall** be produced to determine the risks of lone working and to mitigate any risks – lone working should be avoided where possible. Where persons are required to work alone, i.e. surveys, a lone working procedure shall be in place and communicated to all parties. The procedure shall be agreed with the Site / Project Manager.

5.10 Excavations, Barriers & Existing Underground Services

No mechanical excavation work shall take place within one metre of live High Voltage Cables, nor within 500mm of any known live utility services. Contractors shall provide early notice of their intended work near live services, confirming location of underground services and preparing safety document controls, barriers around all opening, trenches, excavations to prevent access into the areas.

Permission to remove / open mesh, coverings, gratings shall be obtained and removed items are to be replaced as soon as possible. Report any broken or damaged gratings etc and put in place controls to prevent any risk of injury etc. Provide all shoring and support to excavations to prevent collapse as per HSG 150.

Excavated materials not suitable for backfill are to be disposed of in accordance with the Site Spoil Management Plan. Drilling, spikes or posts are to not to be driven into the ground without a permit to break ground as issued by the Site Manager.

There must be no alterations to any RES supplied barriers, screens or notices. Warning lights and reflective surfaces **shall** be placed on barriers around excavation works. Inspection reports are to be undertaken **prior** to entry of excavations, upon completion of shuttering and after additional works, alterations or dismantling as per HSE CIS 47. Weekly inspections are required and evidence submitted to RES. Excavation tags to be positioned at all access/egress points to all excavations and be updated at each inspection.

Segregation of plant and pedestrians shall be maintained; barriers are to be installed at access points and within excavation, along with appropriate signage. Stop blocks to be used with reversing of vehicles up to an excavation.

Pumps to be used to remove water from excavations shall be regularly inspected for stability; pumped water, whether ground or rain is not to be pumped into a watercourse or drain, water is to be managed in accordance with the site drainage plan (typically settlement lagoons).

5.11 Lifting Operations - Mobile cranes or similar type of equipment & lifting accessories

All lifting operations shall be managed in accordance with BS 7121; which shall include preparation of: risk assessment, method statement and lifting plan; and shall be agreed by all parties prior to works taking place. The lifting plan shall cover crane mobilisation, assembly and travel on site as well as any unloading and lifting activities. All crane movements on site are subject to 'Permit for Movement of Heavy Plant'.

All lifting equipment shall be fully certified and in date; copies of all certification and inspection reports shall be provided to RES prior to the works taking place. Safe Working Load (SWL) shall be clearly marked on all lifting equipment and ancillaries, along with test date. Structural steelwork shall not be used for lifting point or anchorage without

agreement of RES (only permitted in exceptional circumstance and has been subject to structural review - Structural Engineer report required).

All temporary points for attachment to be load tested prior to use and record of test provided to RES, method of testing to be agreed. All testing shall be undertaken by an approved Test Engineer to British standards; approved on Lifting Equipment Engineers Association (LEEA) or similar organisation. Persons are not allowed to ride on a hoist unless it has been designed to carry passengers and fitted with interlock gates / safety devices. All persons operating hoists are to be fully trained and have recorded evidence of training to a national recognised standard.

RES lifting operations checklist shall be used unless contractor has their own approved requirements. All crane lifts shall be planned by a competent Appointed Person (AP), an approved Crane Supervisor **MUST** be on site if the AP is not able to monitor the lifting. Lifting plans including method statement / risk assessment shall be reviewed by RES.

5.12 Scaffolding / Ladders

Only competent and fully trained persons **shall** be used to erect, dismantle and modify/alter and inspect scaffolding (CISRS - tube & clip, PASMA - system). All scaffolding **must** display an in date SCAFFTAG or similar signage tag at point of access detailing scaffold status. All scaffolding **shall** be designed, erected, maintained, examined and recorded for the type of scaffold used - where necessary scaffold should be earthed.

All trained scaffold erectors **shall** wear securely attached safety harnesses connected to suitably tested fixed points as appropriate to risk assessment requirements. Scaffold boards **shall** be clamped into place wherever possible; any gaps in scaffold boards **shall** be covered with an appropriate secured material strong enough for the application and activity. Scaffolding **shall** be redesigned for all work activities, adjusted and inspected prior to use for each phase of work, scaffolding is not to be used until it has been cleared for the work activity.

Permission to use a scaffold erected by others must be obtained from the Site Manager and only after an inspection has been carried out. Incomplete and unsafe scaffolding **must** not be used and appropriate measures shall be put in place to prevent usage and when site is unattended access routes to scaffold to be removed to stop persons climbing scaffold.

All ladders used on site **shall** be in good condition and have a system of regular inspection; register to be kept on site. Metal ladders **shall** not be used in the vicinity of electrical equipment or scaffold.

Scaffold inspections **shall** be carried out by a competent person before use and then weekly (7 Days). Inspections will also need to be carried out following any modification or alteration to scaffolding; reports to be provided to RES weekly.

5.13 Work at Height

Any work at height or below ground level activity, **shall** require a method statement & risk assessment and be reviewed by RES prior to starting the work. A safe access & safe work place **shall** be provided via use of crawling boards, ladders, barriers, handrails, toe boards, edge protection as applicable. All materials **shall** be prevented from falling.

Warning notices shall be displayed, along with exclusion zones at all levels, access routes etc.

The Work at Height hierarchy; Avoid, Prevent, Minimise should be implemented; 'collective' protection methods shall take priority to individual personal protection, with fall arrest equipment only being used if all other forms of protection cannot be achieved.

If Fall Arrest is to be used, persons must be fully trained in its use; it shall be inspected before / during use and have appropriate tested attachments; relevant records of equipment tests / dates to be provided. 100% attachment of the equipment is required during working at height, including double lanyards or other fall arrest equipment if collective measures are not implemented, method statement shall include Emergency Plans to rescue a suspended casualty. The Contractor shall inspect all equipment to ensure compatibility between each item being used.

MEWPS, mobile scaffold, podium steps **shall** be used where possible, ladders shall only be used for short duration low risk work, for no more than 30 minutes and only where stability can be achieved.

5.14 Risk & Environmental Controls

Contractors shall identify all potential environmental risks and report to the Site Manager, inform all employees of the site environmental rules and inform RES of environmental incident or potential incident as soon as practicable. Provision of information to RES for carbon counting / sustainability targets and records, typically: vehicles on site, mileage covered, fuel used (site equipment), materials used, visitors and travel details, etc.

5.15 Environmental Plan

Contractors will be required to provide relevant documentation for inclusion into the RES Environmental Plan when applicable, all contractors are to comply with the RES Environmental Plan at all times.

5.16 Existing Features (Sites)

Any disturbance, remediation or disposal of contaminated land shall only be carried out under the direction of RES and in accordance with the Health, Safety (and Environmental) Plan, areas of contaminated land **shall** be fenced off and all persons made aware of its location and hazardous nature. Where any unexpected or potential hazardous obstacles are encountered, work **shall** cease until specialist advice has been obtained.

Underground services **shall** be identified in the site Health, Safety (and Environmental) Plan and controls put in place for the works to be undertaken, i.e. permit to work, risk assessment, etc. If poor conditions of underground services are found after exposure, this is to be reported to RES and the relevant authority.

Any old containers found on site should be checked and emptied by a licensed waste carrier before removal. Pollution is often caused through vandalism, theft or fly tipping - the site or working area **shall** be protected by fencing and locked access to discourage unauthorised access. Any instances of tipping on site **shall** be reported to the Site Manager.

5.17 Discharges to Water

All employees **shall** be made aware of the following:

- Rules about discharges to drains from spillage
- Refuelling / storage controls to be in place & location to be away from surface drains (minimum 10m distance)
- Use of bunded areas / bunds, double skinned bowsers for storing of fuels, liquids etc - to be checked weekly
- Management of any / all spills, spill kits, informing Site Manager etc (included in risk assessment)
- Discharge of any fuel, chemicals, silt, etc to a drain or water course is forbidden. Ensure that a suitable method for containing any surface water is provided when working near to a watercourse
- Surface water drains should only carry uncontaminated rain water and shall be protected from any other contaminants
Methods for prevention of pollution to water courses shall be regularly checked and maintained - failing of systems should be reported immediately to RES.

5.18 Hazardous Substances (COSHH)

Contractor shall provide a list of substances, liquids, gases, etc to be used on site or with their work activities, along with quantities to be stored in secure storage containers, clearly labelled with legible warning signs and content details. MSDS & COSHH Risk Assessment & register and controls in place, including emergency plans.

As defined by COSHH Risk Assessment, spill kits are to be located near any hazardous liquids or substances either at point of use or storage area. Emergency procedures and associated equipment shall be provided - 'Kelp' bio-remediation solution shall be provided for early treatment of any spills after initial clean up.

Generators **shall** be provided with an internal bund and external fuel tank with fuel cut off float switch, the refuelling area shall be kept empty of water (covered area or inceptor/full retention separator).

Bowsers are to be stored to minimise risk of collision, run-away and vandalism, with a flexible pipe, tap or valve provided with an appropriate lock for security when not in use. Flexibly delivery pipes for use with refuelling must be fitted with manually operated pumps or a valve that closes automatically when not in use (delivery end).

Fuel type and capacity shall be displayed, along with no smoking signs and close valve when not in use signs, etc. A responsible person **shall** supervise deliveries, check tank quantities and emptying of tank and residues for safe disposal elsewhere.

Switch gear containing SF₆ (Sulphur Hexafluoride) **shall** be labelled on the equipment and substation door, along with contractor details and any leak **shall** be reported to the Site Manager and acted upon following the emergency contamination spill procedure.

5.19 Waste Management

Waste management **shall** follow the waste hierarchy of: Prevent, Reduce, Re-use, Re-cycle, Other recovery before disposal, all wastes shall be stored and segregated at designated disposal points away from watercourses and potential risk areas (cleared from work area as it is accumulated).

All personnel are to prevent litter from being blown around the site by disposing of rubbish responsibly. Skips must be covered to prevent refuse blowing away and rainwater accumulation. Skips to be replaced when full and disposal shall be in accordance with statutory requirements and RES Site Waste Management Plan, Contractors shall provide appropriate waste documentation.

5.20 Earthworks

Contractors shall work to the site drainage / SuDS design statement for the site. Appropriate drainage / SuDS management methods shall be agreed with the Site Manager where no Construction Method Statement is present.

Contractors shall make best endeavours to prevent water becoming contaminated at the place of work, activity area and to prevent build up of silt; shall use methods of work that eliminate or reduce workings in channels and do not contaminate surface water. Water containing silt **shall** not be discharged directly into rivers, streams or surface water drains. If silty water does occur and present a hazard, suitable treatment will be required - details of controls to be presented to the Site Manager.

Contractor shall prevent water from entering excavations, any cut-off ditches, well point de-watering or pumping shall be in accordance with the site drainage plan. Disturbance to flora and fauna whilst carrying out works **shall** be kept to the minimum and agreed with the Site Manager.

Topsoil and vegetation (not part of subsoil) **shall** be retained and stored in accordance with the Site Spoil Management Plan and reinstated on all areas of stripped ground as soon as possible to prevent erosion and leaching.

Where wet and marshy ground occurs, excavated materials may need to be stored on a geotextile. Turf shall be reinstated wherever possible to maintain the original species mix. Exposed ground and stockpiles / storage shall be kept to the minimum to prevent silt and dust build up, whilst long term storage shall be controlled and stockpiles seeded with recovered seed, covered and silt fences constructed from geotextile where required. In dry weather dust suppression controls will be required to eliminate at source, e.g. watering.

Environmental Agency guidance shall be used as guidance in control measure for works and maintenance in or near water.

5.21 Road Cleanliness

Site roads to be brushed or scraped as required to minimise mud and dust deposits, especially at site entrances and watercourse crossings; mechanical suction brush may be necessary. Wheel wash stations may be required to mitigate debris going onto public highways, private roads or accesses. Used water shall be collected and passed through a silt trap before disposal.

5.22 Drip Trays

Where practicable, drip trays shall be used to contain absorbent granules, sheets or fibres and disposed of to site rules. Once used, drip trays shall be cleaned using

appropriate materials and disposed of in accordance with COSHH regulations. Regular checks and cleaning of drip trays to be carried out.

5.23 Concrete

All concrete disposal shall be as set out in the Site Waste Management Plan (SWMP) when in place or responsibly and in accordance with legislation when no SWMP in place. Cement and wash out water is not to enter any watercourse or aquifer; wash out of cement vehicles **shall** only be permitted in a designated and suitable prepared wash out area(s), clearly signed and to the satisfaction of the RES Site Manager.

Tools, equipment or materials shall not be washed in watercourses, mortar mixing and storage shall be clear of any watercourses. Any concrete works near to a watercourse shall be approved by the appropriate agency and the RES Site Manager.

5.24 Wildlife

Wildlife **shall** be protected from entering and becoming trapped in any part of the works on site. For excavations this may mean provision of fences, crossing or escape routes. Due consideration shall be given to hazards presented to personnel from wildlife; adders, wild boar, buzzards, wasps etc.

5.25 Emergencies

Environmental emergencies such as spills **shall** be dealt with in accordance with the Environmental Emergency Response Plan - familiarisation with this plan is required before commencement of any works. Any spill kit provided **shall** be made accessible at all times to all site staff.

5.26 Environmental Assessment

Contractor shall provide an assessment of the likely environmental impacts of their activities (if applicable), along with controls to minimise impact and any corrective measures and actions.

6 APPENDICES

Appendix 1 - References

Appendix 2 - Issue / Receipt for Safety and Environmental Requirements for Contractors on all activities

Appendix 1 - RES References

The following documents may contain useful references.

App 1.1 RES Documents

- i) RES Health, Safety, Quality & Environmental Management Systems, and associated documentation including all IMS, Safety Procedures, RAWP and documents and templates

App 1.2 Project Specific Documents

- i) The Health, Safety & Environment Plan (Pre-tender and construction phase)
- ii) Health & Safety Plan
- iii) Quality Plan
- iv) Environmental Plan
- v) Inspection and Test Plan
- vi) Site Waste Management Plan



Appendix 2 - Issue / Receipt for Issue / Receipt for Safety and Environmental Requirements for Contractors on all activities

SAFETY & ENVIRONMENTAL REQUIREMENTS FOR ALL CONTRACTORS

ISSUE DOCUMENT

Issued to

Contract Number and Description
.....
...
.....
...

Location
.....

The person named below is the Company Project Manager responsible for overall management of the contract.

Project Manager Telephone
.....

The person named below is the Company Site / Facilities Manager responsible for local management of the contract, who shall be permanently on Location.

Site Manager Mobile
.....

Other Site Telephones
.....

The Site Manager shall always be the first point of contact, if for any reason, he is not available you shall contact the Company Project Manager.

The Company Integrated Management System and Site Rules are available / displayed at:
.....
.



SAFETY & ENVIRONMENTAL REQUIREMENTS FOR ALL CONTRACTORS

RECEIPT DOCUMENT

RENEWABLE ENERGY SYSTEMS COPY

(To be detached and retained by the Site Manager when this document is issued to a Contractor on site)

I acknowledge receipt of the safe works procedure - Safety & Environmental Requirements for All Contractors.

Contract Number and Description

.....

.....
...

.....
..

Location

.....

Signed

Contracting Company

.....

Date

Contracting Company Head Office Telephone

.....

Local/site Telephone Number



ANNEX 2: EMERGENCY PROCEDURE IN THE EVENT OF A CONTAMINANT SPILLAGE



Emergency Procedure in the Event of a Contaminant Spillage

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1.0 OBJECTIVES

This procedure details the emergency procedure to be followed and actions to be taken in the event of a hazardous waste spillage such as oil, fuel and chemicals, occurring on a RES managed premises or site / project in order that the environmental impacts that may be associated with a hazardous waste spillage may be mitigated.

2.0 SCOPE

This procedure covers all UK geographic locations; sites, project or offices for which RES are responsible for or manage.

3.0 PROCEDURE

3.1 *Project, Site or Office Locations*

		Responsibility
i)	<p>The Contractor shall provide MSDS and COSHH assessments for all substances controlled under COSHH that are to be used or stored on the site.</p> <p>Records of the supplied MSDS & CoSHH Assessments shall be maintained.</p> <p>Note: Substances with hazardous properties such as cement, concrete and curing agents are all controlled by the COSHH.</p>	C
ii)	<p>Appropriately sized spill kits shall be provided for the controlled substances that will be used or stored on the site; the contractor shall train personnel in the use of these spill kits and maintain training records.</p>	C RRM
iii)	<p>The Contractor shall provide oil spill training and awareness to their staff</p> <p>RES have subscribed to an emergency environmental call-off support service from Veolia to be used the event of a major spill, details included in Project Directory or can be provided by the HSQEM.</p>	C, HSQEM
iv)	<p>In the event of a liquid spill occurring the Contractor shall cease work in the vicinity immediately.</p> <p>If spillage is flammable, extinguish all ignition sources.</p> <p>Identify source of pollution and rectify the problem.</p> <p>The Contractor's trained personnel shall immediately deploy the spill kit in accordance with the manufacturer's instructions.</p> <p>Contractor's personnel shall don appropriate PPE and clean up the spill.</p> <p>All used spill kit materials should be disposed of in the proper manner.</p>	C

v)	<p>In the event of a concrete spillage into water channel or surface water, as the waste is highly alkaline it is regarded as Hazardous Waste. Every effort should be made to contain the movement of the liquid cement in the watercourse or drainage channel.</p> <p>Similarly in the event of a Peat / Spoil Movement / Slip into a water course; remove any peat or clay material which has entered the watercourse and transport to a location where it will no longer be a source of pollution.</p> <p>Notify the following agencies; Environmental Agency (region specific; EA, SEPA or NIEA etc), local Fisheries.</p>	RRM, C
vi)	<p>Place geotextile silt fences/stone barrages at downstream points in the river as required.</p> <p>Constant monitoring should be maintained not only of the water quality (clarity) downstream of the check dams, but also of the excavated peat or clay material.</p> <p>Consideration should also be given to the subsequent movement of the spoil / peat and any preventative / containment measures required.</p>	RRM
vii)	The Contractor shall inform the RRM of the incident as soon as possible and certainly no more than 1 hour after the spill.	C
viii)	The Contractor is responsible for replacing the used spill kits as soon as possible and no later than 24 hours after use.	C
ix)	The Contractor is responsible for ensuring that used spill kits and any other oil / fuel soaked / contaminated material e.g. rags, used during the incident are disposed of in accordance with the Environmental Waste Management Regulations in operation. These materials shall be bagged up, and disposed of at a licensed hazardous waste disposal site e.g. taken away by a licensed oil / fuel disposal / broker company.	C
x)	The Contractor shall submit copies of the receipt or waste oil certificate to the RRM within 48 hours.	C

4.0 REFERENCE DOCUMENTS

- i) IMS 20 – Emergency Incident Preparedness and Response [HSQE00-001043](#)

5.0 DEFINITIONS

Abbreviation or term	Explanation of abbreviation or term
i) C	Contractor: Any company or person employed by RES to carry out any work on a site / project or office location
ii) COSHH	Control of Substance Hazardous to Health Regulations 2011
iii) H&S Plan	Health and Safety File maintained by the Site Manager
iv) HSQE	Health, Safety, Quality & Environment
v) HSQEM	HSQE Manager (Head of HSQE)
vi) MSDS	Material Safety Data Sheet supplied by manufacturer
viii) RRM	Responsible RES Manager (Construction Site – Construction Site Manager, Generation Site – Site / Asset Manager, Office Locations – Office Manager)



ANNEX 3: WATER QUALITY MONITORING PLAN



Water Quality Monitoring Procedure

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4.1	Controlling Documentation	Error! Bookmark not defined.

1 INTRODUCTION

Res Construction Ltd. Will appoint a suitably qualified consultant to provide water quality monitoring services for the wind farm. The following contains information regarding the proposed procedure, testing regime and legislation to be employed.

2 PROCEDURAL APPROACH

Legislation

The key primary legislation currently enforced by the different Environmental body to protect the quality of water is:

Northern Ireland Environment Agency (NIEA)

- The Industrial Pollution Control (NI) Order 1997;
- The Waste and Contaminated Land (NI) Order 1997 (partially enacted); and
- The Waste Order (NI) 1999

A series of Regulations (secondary legislation) are also relevant including (among others) 'The Surface Waters (Dangerous Substances) Regulations (NI) 1998' and the 'Groundwater Regulations (NI) 1998'.

Any surface water or groundwater (where feasible whose catchment lies wholly or partially within the Wind Farm boundary will therefore be considered to be a 'controlled water' with respect to this water quality monitoring programme.

Controlled water covers all tidal rivers, all freshwater rivers, all lakes and ponds and any water contaminated in underground strata.

Strategy

During construction works carried out at the wind farm site, there is potential for contamination, emanating from construction plant or materials to enter the controlled surface and groundwaters either by direct runoff, leaching or infiltration. Consequently, it will be necessary to monitor the concentrations of certain key contaminants (refer to section - "Sample Testing" for full list) at key locations throughout the wind farm site with due regard to the relevant 'Pollution Prevention Guidelines' prepared by NIEA; specifically PPG5 ('Works liable to affect watercourses') and PPG6 ('Working at Construction and Demolition sites'). These sampling points will represent a selection of relevant watercourses and available wells.

The exact location of each sampling point will be determined during a walkover survey to be conducted as part of a hydrological desk study. The location of the sample points will reflect the point on all relevant controlled waters closest to the proposed active construction areas. Sampling points up-stream and down-stream of the construction activity area should also be selected to provide a full profile of the controlled waters.

Early consultation with the Environmental Water Quality Officer is recommended to discuss what the most sensitive features are and understand exactly what they would expect from the monitoring. This also provides an opportunity for the developers to demonstrate diligence and build a relationship in the case of future problems,

Sampling Strategy

Site sensitivity must be taken into account when deciding on the level and periodicity of sampling that is to be undertaken, sensitive sites/ areas are normally defined by the NIEA, therefore, close co-operation with the NIEA is advisable to ensure that any planned monitoring/ sampling will fulfil or obligations and meet their requirements. As considerable costs may be incurred with a prolonged testing regime the site sensitivity is crucial in identifying which sites may need the additional monitoring. A sensitive site may well require a monitoring programme to be initiated to establish the baseline conditions whereas a non-sensitive site may well find that an initial sampling visit, carried out prior to commencement of site construction mobilization and activity, is suffice to establish a baseline water quality data set.

Non- Sensitive Testing;

An initial sampling visit, carried out prior to commencement of site construction mobilization and activity, is normally sufficient to establish the baseline water quality data set. Ongoing monitoring will be carried out during the construction phases then a post-construction sampling visit will be carried out following the cessation of all construction work and demobilization. Post-construction testing must reflect the needs of the site and replicate what testing was undertaken prior to construction.

The following table summarises the proposed frequency of the ongoing water quality monitoring requirement for non-sensitive sites:

Construction Phase	Frequency
Civil Works	Monthly
Turbine Erection	Bi-Monthly

Sensitive Site Testing

Sensitive sites may require a monitoring programme to be carried out as 4 or 5 visits over an 8 to 10 week period, ideally covering at least one high rainfall event. As water quality conditions can change quickly in response to natural conditions, this programme of monitoring will provide additional information during high flows, e.g. when there may be more suspended sediment, and may provide extra data to project developers liability. Ongoing monitoring will be carried out during construction phases and the post-construction sampling visit will be carried out following cessation of all construction work and demobilization. Again, this post-construction testing must reflect the needs of the site and replicate what testing was undertaken prior to construction.

Data from the ongoing and post-construction surveys will be compared to the baseline data to check for any anomalies or changes to the water quality.

In the event that an incident (such as fuel spillage or spoil slip) occurs, that potentially effects site groundwater or surface watercourses, or there is justifiable cause for concern, a targeted programme of sampling will be implemented to assess the impact and determine ongoing water quality.

It is essential that an ongoing dialogue is maintained with NIEA to ensure that the monitoring regime is sufficient to ensure that any planning conditions are not compromised.

Sampling Procedure

The protocol followed at each sample point will comprise:

- i. All samples will be collected by a suitably experienced consultant.
- ii. All sample containers used will be fully compatible with the intended analysis as agreed with the accredited laboratory.
- iii. All containers will be provided by the laboratory and comprise 1 x 2000ml plastic bottle and 1 x 500ml amber jar.
- iv. All containers will be sterilised and sealed by the laboratory prior to delivery.
- v. All containers will be clearly labelled on site with water resistant labels.
- vi. Rain water samples will be collected at a distance as far from the bank as practicable. If it is necessary for the sampler to stand in the river the container will be filled upstream of the sampler.
- vii. The sample will be taken by immersing an open mouthed vessel to a depth just below the surface to avoid surface film being sampled.
- viii. Care will be taken to avoid the disturbance of the bottom sediment close to the sampling point.
- ix. Temperature and total dissolved solids are to be measured in the field.
- x. In accordance with codes of practice:
 - a. BS5930 - Site Investigation and BS EN ISO 10175:2001 - Investigation of Potentially Contaminated Sites, groundwater from wells should be purged until consecutive readings of pH, temperature and conductivity have stabilized within 10% of each other or three times the volume of standing water within the well has been purged, to ensure a representative groundwater sample is taken.
- xi. Samples will be stored in sealed chilled cooler boxes until delivery to the laboratory
- xii. The sample name, date, weather, flow and visual description will be recorded at each point.
- xiii. A series of on-site hydro chemical analyses will be completed using portable calibrated field instruments. These will be completed with due regard to the manufacturer specification. Parameters to be analysed will include temperature, pH, Electrical conductivity (EC), Dissolved Oxygen (DO) and Oxidation/ Reduction Potential (ORP).
- xiv. The samples will be dispatched to the accredited laboratory to arrive no later than 48hrs after sampling.
- xv. Samples were accompanied with laboratory specific Chain of Custody documentation.

Sample Testing

It is proposed that the following analyses will be carried out on the water samples collected:

- Heavy metals (10 elements);
- Fuels and Oils;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Biological Oxygen Demand (BOD);
- Chemical Oxygen Demand (COD);
- pH;
- Total Suspended Solids;
- Total Dissolved Solids;
- Field Readings (observation of visible oils, electrical conductivity, dissolved oxygen, temperature, pH, and oxidation and reduction potential)

Note: Depending on the site, undertaking hydrocarbon and metal analysis may not be required for each monitoring visit. For example, if there are no known sources of metals or if construction works with the potential for hydrocarbon leaks are distant from water bodies. Additionally, turbidity analysis may be required as a precaution if construction works are undertaken that may alter the natural flow of a watercourse, e.g. pillars supporting a watercourse crossing.

Reporting

A baseline report will be prepared 2 weeks following initiation of the baseline water quality monitoring programme. This report will provide details of any contamination concentrations recorded and will be used to depict 'uncontaminated background pollution levels' for the site.

The analytical results will be compared to the most relevant Environmental Quality Standards appropriate.

Following each of the ongoing monitoring visits a brief report including a discussion of the analytical results with respect to the most relevant Environmental Quality Standards will be prepared within 2 weeks of submission to the laboratory. A series of rolling graphs of water quality results would be included in the reporting. Any environmental deterioration illustrated by the results would be highlighted.

In the event of a potential pollution incident, all relevant monitoring points will be visited and re-sampled to determine any changes relative to baseline data. A report detailing the findings will be prepared for each incident and recommendations provided for any further monitoring and/ or requisite mitigation measures.

Following completion of the construction of the wind farm, all sample points will be visited, re-sampled and analysed for the full suite of analytical parameters and a further report prepared, assessing and discussing any impacts upon water quality throughout the construction process.

All information, recovered during the monitoring process, will be collated and an assessment made regarding the impact on the surface and groundwater of the construction activities.

3 PERSONNEL & EQUIPMENT

Personnel

All personnel taking samples, analysing and reporting will be suitably qualified.

Equipment

Sample containers and cool box
Disposable gloves
Submersible pump or wattera pipe
Water dip meter
Waterproof pH and Temperature meter
Waterproof Electrical Conductivity meter
Waterproof ORP and Temperature meter
Waterproof Dissolved Oxygen meter

4 CONSULTANT EXPERIENCE

The contractor will be appointed based upon evidence of previous relevant experience within the UK, Ireland and EC, their ability to commit appropriate resources to the project and the qualifications and competency of the personnel charged with completing the work.

Technical Appendix 1.6

Proposed Lighting Scheme

Technical Appendix 1.6: Turbine Lighting

Introduction

- 1.1. To meet net zero targets, wind turbines need to increase their energy capacity and one way to achieve this is to increase the size of the rotor blades, which in turn necessitates an increased tip height. However, it is legislated in the UK that obstacles above 150 metres are required to have aviation lighting fitted so due consideration has been given to Carnbuck Wind Farm in this respect.
- 1.2. Article 222 of the Air Navigation Order (ANO) 2016 (amended 2021) states that an en-route obstacle must be fitted with medium intensity (2000 candela) steady red aviation lights as close as possible to the top of the obstacle and at intermediate levels between the top lights and ground level unless the aviation authority has granted permission not to fit lights.
- 1.3. A wind turbine with tip height of 150 metres or more, not located in the vicinity of a licensed aerodrome, is defined as an 'en-route obstacle' for the purposes of aviation.
- 1.4. In June 2017, the Civil Aviation Authority (CAA) issued a policy statement related to lighting of onshore wind turbines for tip heights in excess of 150 metres above ground level (AGL) to clarify the UK application of ANO Article 222.
- 1.5. The CAA considers the top of a wind turbine generator to be the maximum blade tip height, however, in terms of locating the aviation lighting on a wind turbine, the ANO term, "as close as possible to the top of the obstacle", is deemed to be on the nacelle
- 1.6. The CAA requires that a wind turbines are:
 - Fitted with a medium intensity (2000 candela) red light on the nacelle that displays in all directions, along with a second back up light in case of failure
 - Fitted with at least three (to provide 360 degree coverage) low-intensity (32 candela) lights at an intermediate level of half the nacelle height
 - Operated by an acceptable control device to ensure the lights will be turned on when illuminance falls below 500 LUX and turns the lights off when the illuminance rises to a level of 500 LUX or more

Proposal

- 1.7. The CAA has been consulted about the lighting requirement for Carnbuck. Given that the site is in a relatively low area of activity from an aviation perspective, an 'in principle' night time aviation lighting scheme has been agreed with the CAA as a variation to the lighting requirements specified in ANO Article 222, as follows:

- Medium intensity steady red (2000 candela) lights on the nacelles of seven of the 12 turbines, specifically, T1, T3, T5, T7, T8, T11 and T12
 - A second 2000 candela light on the nacelles of the above turbines to act as alternates in the event of a failure of the main lights
 - These lights must be capable of being dimmed to 10% of peak intensity when the visibility as measured at the wind farm exceeds 5 km
 - Ministry of Defence (MOD) specification infra-red lights installed on the nacelles of turbines T2, T5, T6, T8, T11 and T12
 - Intermediate level 32 candela lights are not required to be fitted on the turbine towers
- 1.8. A final scheme for aviation lighting will be agreed with the CAA post planning consent.