

CHAPTER A4: DESCRIPTION OF DEVELOPMENT

A.4.1	Introduction	A4-2
A.4.2	Site Access	A4-4
A.4.3	Core Development Components	A4-4
A.4.4	Associated Development Components	A4-6
A.4.5	Construction Programme	A4-7
A.4.6	Environmental Management during Construction	A4-7
A.4.7	Summary	A4-8

Figures

Figure A4.1: Site Layout

List of Figures from EIA Report (January 2019) for Reference

- Figure 4.1: Site Layout
- Figure 4.2: Typical WTG Dimensions
- Figure 4.3: Typical WTG Foundation
- Figure 4.4: Typical Access Track Details
- Figure 4.5a: Proposed LiDAR Plan
- Figure 4.5b: Proposed LiDAR Dimensions
- Figure 4.6: Construction Compound

List of Appendices from EIA Report (January 2019) for Reference

- Appendix 4.1: Draft Construction Environmental Management Plan (CEMP)
- Appendix 4.2: Schedule of Mitigation

A.4. DESCRIPTION OF DEVELOPMENT

A.4.1 Introduction

A.4.1.1 Chapter 4: Description of Development of the EIA Report (January 2019) described the elements that constitute the Gordonbush Extension Wind Farm section 36C proposal (the Proposed Varied Development). It provides a description of the key development components and information regarding the construction, operation and decommissioning phases.

A.4.1.2 The focus of this Chapter is to describe the changes associated with the Proposed Varied Development (Addendum) that are now proposed in this Addendum. Where there have been no changes to the Proposed Varied Development, this is noted and a cross reference back to the relevant section or paragraph within the EIA Report (January 2019) is provided.

A.4.1.3 The layout of the Proposed Varied Development (Addendum), reflecting the Addendum changes, is shown on Figure A4.1: Site Layout. The revised approximate central grid reference is 284700, 913400, as the site boundary has been extended to the west to include a new borrow pit search area, and associated access.

A.4.1.4 The changes associated with the Proposed Varied Development (Addendum) are summarised as:

- Relocation of T4 by approximately 113m, and renaming of Turbine to T4b;
- Deletion of Borrow Pit 2 Search Area;
- Inclusion of new Borrow Pit 3 Search Area, including use of existing access and temporary watercourse crossing;
- Relocation of Batching Plant; and
- Construction of an additional access track from T12 to Lidar/BP1.

A.4.1.5 Paragraph 4.1.4 of the EIA Report (January 2019) provides a bullet point list of the key components of the Proposed Varied Development. For ease of reference, this is repeated here, with those changes associated with the Proposed Varied Development (Addendum) highlighted in bold:

- Eleven no. wind turbines of up to 149.9m tip height with internal transformers. This is a reduction in four no. turbines from the Consented Development, and an increase in tip height (from 115m / 130m up to 149.9m) and rotor diameter (from 93m / 105m to 136m). **The only change to the remaining eleven turbines compared to the consented turbine layout is the repositioning of Turbine 4 by approximately 113m. This has subsequently been renamed as T4b in this Addendum;**
- crane hardstanding area at each wind turbine location with a maximum area of 1900m², as per the Consented Development;
- one LiDAR and associated hardstand with a maximum area of 100m². This is to replace one permanent and one temporary meteorological mast, as proposed for the Consented Development;
- Retention of the existing operational Gordonbush Wind Farm meteorological mast (southern). This was proposed to be removed as part of the Consented Development, but will now be required as part of the Proposed Varied Development given the proposed switch to LiDAR;
- on site access tracks (of which approximately **5.56km** are new access tracks and approximately 11.3km are existing tracks where upgrades may be undertaken to facilitate delivery of the wind turbine components). This is a reduction in overall new track length of approximately **2.4km**, compared to the Consented Development;

- a network of underground cabling to connect each wind turbine to the existing onsite substation, as per the Consented Development;
- modifications to the existing on-site control building and grid substation to accommodate additional cables and equipment, as per the Consented Development; and
- any associated ancillary works required.

A.4.1.6 The additional operations building proposed as part of the Consented Development was removed as part of the Proposed Varied Development and no change is proposed in this Addendum.

A.4.1.7 In addition to the above components of the operational wind farm, the construction phase would comprise the following:

- a temporary concrete batching plant (**new location now proposed**);
- temporary telecommunications infrastructure;
- a temporary construction compound and storage area; and
- reopening and extension of two of the original borrow pits developed as part of the Gordonbush Wind Farm (see Appendix A9.1: Borrow Pit Report).

A.4.1.8 Table 4.1: Land Use of the EIA Report (January 2019) provided land use calculation estimates for the maximum permanent development footprint of the wind farm, together with additional land take required during the construction period. These estimates are provided in Table A4.1 below, together with any changes associated with the Proposed Varied Development (Addendum).

Table A4.1: Land Use

Wind Farm Component	Temporary Land Use (m2) ES 2015	Permanent Land Use (m2) ES 2015	Temporary Land Use (m2) Section 36C Proposed Varied Development EIA Report (Jan 2019)	Permanent Land Use (m2) Section 36C Proposed Varied Development EIA Report (Jan 2019)	Proposed Varied Development (Addendum) Changes, Compared to EIA Report (Jan 2019)
Turbines	9,600	30,400	3,456	25,080	No change
New Cut Track	0	39,023	0	32,364	Increase in permanent land use to 34,366m ²
New Float Track	0	9,378	0	7,535	No change
Existing track (to be upgraded)	0	11,000	0	11,000	No change
Passing Places (4x4 vehicles)	0	2,700	0	1,200	No change
Borrow Pits (search area)	114,369	0	114,369	0	Increase in temporary land use to 118,352m ²
Turbine Vehicle Turning Heads	0	3,240	0	3,346	No change
Temporary Construction	7,500	0	7,500	0	No change

Wind Farm Component	Temporary Land Use (m2) ES 2015	Permanent Land Use (m2) ES 2015	Temporary Land Use (m2) Section 36C Proposed Varied Development EIA Report (Jan 2019)	Permanent Land Use (m2) Section 36C Proposed Varied Development EIA Report (Jan 2019)	Proposed Varied Development (Addendum) Changes, Compared to EIA Report (Jan 2019)
Compound					
Concrete Batching Plant	5,000	0	5,000	0	No change
Operations Building and Compound	0	2,500	0	0	No change
Substation	0	0	0	0	No change
Permanent Meteorological Mast (now LIDAR)	0	840	0	29	No change
Total (m2)	136,469	99,081	130,325	80,554	Increase in temporary land use to 134,308m2 / 13.43ha Increase in permanent land use to 82,556m2 / 8.25ha
Total (ha)	13.65	9.9	13.03	8.06	As above

A.4.2 Site Access

A.4.2.1 Unchanged, please refer to Section 4.2 of the EIA Report (January 2019).

A.4.3 Core Development Components

Wind Turbines

Turbine Specification

A.4.3.1 Unchanged, please refer to Paragraph 4.3.1 of the EIA Report (January 2019).

A.4.3.2 Unchanged, please refer to Paragraph 4.3.2 of the EIA Report (January 2019).

A.4.3.3 Turbine grid references and maximum dimensions for each turbine are as listed in Table A4.2. The only change to the turbine grid references from that presented in Table 4.2 of the EIA Report (January 2019) is Turbine 4, which has been repositioned by approximately 113m and referenced as T4b. This has been updated and shown in bold in Table A4.2 below. Table A4.2 also highlights those turbines that have been removed from the Consented Development.

Table A4.2: Turbine grid references and maximum / nominal turbine dimensions

Turbine Number	Grid Reference	Maximum Height to Blade Tip (m)	Nominal Hub Height (m)	Nominal Rotor Diameter (m)
1	284738 914846	149.9	81.9	136
2	284766 914339	149.9	81.9	136
3	285454 913704	149.9	81.9	136
4b	285796 913484	149.9	81.9	136
5	285315 913037	149.9	81.9	136
6	285015 913928	149.9	81.9	136
7	284410 914122	149.9	81.9	136
8	284221 913677	149.9	81.9	136
9	284669 913649	149.9	81.9	136
10	285111 913393	149.9	81.9	136
11	284020 913260	Turbine removed from Proposed Varied Development layout		
12 11*	284692 913100	149.9	81.9	136
13	284992 912698	Turbine removed from Proposed Varied Development layout		
14	283820 912873	Turbine removed from Proposed Varied Development layout		
16**	284659 912370	Turbine removed from Proposed Varied Development layout		

*** Note that the consented Turbine Number 12 has been renumbered in the table above as Turbine Number 11.**

**** Turbine Number 15 was included in the 2015 ES, but removed from the 2016 FEI Report (for the Consented Development) and was voluntarily withdrawn from the application.**

A.4.3.4 Please refer to Paragraphs 4.3.4 to 4.3.7 of the EIA Report (January 2019) for further description of turbine specification.

Turbine Installation

A.4.3.5 Unchanged, please refer to Paragraphs 4.3.8 and 4.3.9 of the EIA Report (January 2019).

Turbine Bases

Foundations

A.4.3.6 Unchanged, please refer to Paragraphs 4.3.10 to 4.3.17 of the EIA Report (January 2019).

Hardstandings

A.4.3.7 Unchanged, please refer to Paragraphs 4.3.18 to 4.3.20 of the EIA Report (January 2019).

Access Tracks

A.4.3.8 The access track layout is shown on Figure A4.1: Site Layout. From the C6 Strath Brora road at Ascoile, access to the site would be achieved by utilising the existing track infrastructure developed as part of the operational Gordonbush Wind Farm where possible (see Plate 4.2a and 4.2b of the EIA Report (January 2019)).

A.4.3.9 There is currently approximately 21km of track constructed as part of the operational wind farm site that has been built to a high standard with a width of around 4.5-5m. Approximately 11.3km of the existing tracks would be utilised to access the Proposed Varied Development (Addendum) and the existing control and substation buildings. Localised widening of the

existing track may be required to facilitate the delivery of the wind turbine components dependent on the wind turbine chosen to be used on the Proposed Varied Development (Addendum).

- A.4.3.10 Approximately 5.56km of new tracks with a minimum 4.5m wide running surface and localised widening on corners would be required to access the turbines from the existing access tracks, for use both during construction and operation. The access track would be designed to incorporate passing places that would be suitable for construction plant and 4x4 traffic (approximately 25m x 3m) (see Figure 4.4: Typical Access Track Details of the EIA Report (January 2019)). This is a reduction in new track length from the Consented Development of 2.4km.

Access Track Construction

- A.4.3.11 Unchanged, please refer to Paragraphs 4.3.24 to 4.3.27 of the EIA Report (January 2019).

Access Track Drainage

- A.4.3.12 Unchanged, please refer to Paragraphs 4.3.28 to 4.3.30 of the EIA Report (January 2019).

Access Track Watercourse Crossings

- A.4.3.13 Unchanged, please refer to Paragraph 4.3.31 of the EIA Report (January 2019) and see 4.4.5 below.

Temporary Construction Compound

- A.4.3.14 Unchanged please refer to Paragraph 4.3.32 of the EIA Report (January 2019).

LiDAR

- A.4.3.15 Unchanged, please refer to Paragraphs 4.3.33 to 4.3.34 of the EIA Report (January 2019).

Electrical Infrastructure

- A.4.3.16 Unchanged, please refer to Paragraphs 4.3.35 to 4.3.37 of the EIA Report (January 2019).

A.4.4 Associated Development Components

Concrete Batching

- A.4.4.1 It is anticipated that concrete batching would be undertaken on site. The location of the batching plant has been moved from the location proposed for the Proposed Varied Development in the EIA Report (January 2019) to a revised location adjacent to the temporary construction compound (see Figure A1.4: Proposed Varied Development - Addendum). The batching facility would comprise batching towers and a number of feeder hoppers used to store the constituent parts (water, fine and coarse aggregates and cement), which are mixed to form concrete. This process is consistent with the Consented Development.

Borrow Pits

Predicted Aggregate Requirements

- A.4.4.2 It is estimated that approximately 109,000m³ of stone would be required for construction of the Proposed Varied Development (Addendum) (including access tracks, structural fill beneath turbine foundations, and hardstandings at turbine bases and compounds). This is approximately 35,000m³ less stone than estimated for the Consented Development.

Borrow Pit Locations

- A.4.4.3 Stone required during construction is anticipated to be obtained from borrow pits which were utilised for the existing Gordonbush Wind Farm site (as shown on Figure A4.1: Site Layout). Where the borrow pits do not yield suitable material for certain construction operations such as concrete batching or access track capping, it may be necessary to import material to the site. This would be determined following detailed ground investigation works.
- A.4.4.4 The volumes provided in Table A4.3 are indicative of the volume of stone each borrow pit would provide but this is subject to detailed ground investigation and design during the pre-construction design phase. It is anticipated the extraction volumes from each borrow pit would vary as further information becomes available during the detailed design phase. Further details are provided in Appendix A9.1: Borrow Pit Assessment.

Table A4.3: Borrow Pits

Borrow Pit Reference	Location Coordinates	Indicative Volume
BP1	284827, 912623	105,600m ³
BP3	282784, 912359	20,000m ³

- A.4.4.5 Borrow Pit 3 (Bull burn) has been included for the Proposed Varied Development (Addendum) following environmental constraints to Borrow Pit 2 identified during ground investigation works. Borrow Pit 2 has been removed.
- A.4.4.6 Current access to Borrow Pit 3 (Bull burn) crosses the Allt a Mhuillinn watercourse via a concrete ford - denoted “water crossing” in Figure A4.1. This structure is not suitable for the plant vehicles required to transport materials from the borrow pit to Site and will be improved by the installation of a temporary structure, bailey bridge or similar, for the duration of the Works. The structure will be designed to safely transport the loads required and will comply with SEPA regulations. SEPA will be notified to inspect the structure to ensure full compliance.
- A.4.4.7 The borrow pits would require the use of plant to both win and crush the resulting rock to the required grades. It is anticipated that rock would be extracted by breakers and some blasting may be required.

Borrow Pit Reinstatement

- A.4.4.8 Following construction, the borrow pits would be reinstated with a suitable restoration profile (refer to Appendix A9.1: Borrow Pit Assessment).

A.4.5 Construction Programme

- A.4.5.1 Unchanged, please refer to Section 4.5 of the EIA Report (January 2019).

A.4.6 Environmental Management during Construction

- A.4.6.1 Unchanged, please refer to Paragraph 4.6.1 of the EIA Report (January 2019), albeit reference to Figure 4.1: Site Layout should be directed to Figure A4.1: Site Layout.

Construction Environmental Management Plan

- A.4.6.2 Unchanged, please refer to Paragraphs 4.6.2 to 4.6.3 of the EIA Report (January 2019).

Site Environmental Management

- A.4.6.3 Unchanged, please refer to Paragraphs 4.6.4 to 4.6.6 of the EIA Report (January 2019).

Waste Management

- A.4.6.4 Unchanged, please refer to Paragraphs 4.6.7 to 4.6.9 of the EIA Report (January 2019).

Health and Safety and Related Issues

A.4.6.5 Unchanged, please refer to Paragraphs 4.6.10 to 4.6.14 of the EIA Report (January 2019).

Site Reinstatement

A.4.6.6 Unchanged, please refer to Paragraphs 4.6.15 to 4.6.19 of the EIA Report (January 2019).

Consultations with the Local Community during Construction

A.4.6.7 Unchanged, please refer to Paragraph 4.6.20 of the EIA Report (January 2019).

Site Operation and Maintenance

A.4.6.8 Unchanged, please refer to Paragraphs 4.6.21 to 4.6.22 of the EIA Report (January 2019).

Track Maintenance

A.4.6.9 Unchanged, please refer to Paragraphs 4.6.23 to 4.6.24 of the EIA Report (January 2019).

Habitat Management Plan

A.4.6.10 Please refer to Paragraphs 4.6.25 to 4.6.28 of the EIA Report (January 2019).

Site Decommissioning

A.4.6.11 Unchanged, please refer to Paragraphs 4.6.29 to 4.6.35 of the EIA Report (January 2019).

A.4.7 Summary

A.4.7.1 Table A4.4 provides a summary of the project’s components and construction processes, and the relevant Condition of Consent that secures appropriate mitigation.

Table A4.4: Summary of Changes and associated Conditions of Consent

Description	s.36 Consented Development	s.36C Proposed Varied Development (EIA Report Jan 2019)	s.36C Proposed Varied Development (Addendum) Changes	Related Condition / Mitigation
Number of turbines (WTG)	15	11	No change to s.36C Proposed Varied Development application	Details to be provided to Local Planning Authority under Condition 7 of the Conditions of Consent. Micro-siting of turbines would be achieved under Condition 11 of the Conditions of Consent.
Maximum Tip Height (TH)	115m x 3 (WTG)	N/A – These turbines are removed	No change to s.36C Proposed Varied Development application	
	130m x 12(WTG)	Up to 19.9m increase @149.9m x 11 (WTG)	No change to s.36C Proposed Varied Development application	
Maximum Rotor Diameter (RD)	Max RD 93m (3 WTG @ 115m TH)	N/A – These turbines are removed	No change to s.36C Proposed Varied Development application	
	Max RD 105m (12 WTG @ 130m TH)	Up to Max 136m	No change to s.36C Proposed Varied Development application	

Description	s.36 Consented Development	s.36C Proposed Varied Development (EIA Report Jan 2019)	s.36C Proposed Varied Development (Addendum) Changes	Related Condition / Mitigation
Turbine Positions	As per Consented layout	No change to remaining eleven turbines	Relocation of Turbine 4 by approximately 113m (T4b). All other turbine positions remain unchanged.	
Borrow Pits	BP1 indicative extraction volume= 48,000m ³ BP2 indicative extraction volume= 96,000m ³ Net indicative extraction volume=144,000m ³	No change to BP search area. Amend the indicative volume of extraction BP1: increase from 48,000m ³ to 105,600m ³ BP2: decrease from 96,000m ³ to 39,000m ³ . Net indicative extraction volume increased to 145,200m ³	Removal of BP search area 2. Inclusion of one additional BP search area (BP3). BP1: no change (105,600m ³). BP2: removed. BP3: 20,000m ³ Net indicative extraction volume reduced to 125,600m ³	Details of the working and restoration of borrow pits required under Condition 14 of the Conditions of Consent.
Temporary Batching Plant	North of BP2	New location	Revised location	Details required under Condition 13 of the Conditions of Consent.
New Access Tracks	7.96km	5.33km	5.56km	Details to be confirmed to Local Planning Authority under Condition 5 of the Conditions of Consent. Micro-siting of turbines would be achieved under Condition 11 of the Conditions of Consent.
Operations Building	As per Consented layout	No longer required.	No change to s.36C Proposed Varied Development application	N/A
Meteorological Mast	Permanent and temporary met mast as per Consented Layout. Removal	LiDAR proposed, removing requirement for permanent and temporary met	No change to s.36C Proposed Varied Development application	Details required under Condition 13 of the Conditions of Consent.

Description	s.36 Consented Development	s.36C Proposed Varied Development (EIA Report Jan 2019)	s.36C Proposed Varied Development (Addendum) Changes	Related Condition / Mitigation
	of existing operational Gordonbush Wind Farm meteorological mast (southern).	masts. Retention of existing operational Gordonbush Wind Farm meteorological mast (southern).		
Blasting				In accordance with Condition 15 of the Conditions of Consent.
Construction Environmental Management				Details to be provided in accordance with Condition 23 of the Conditions of Consent.
Waste Management				Details to be provided in accordance with Condition 23 of the Conditions of Consent.
Site Reinstatement				Details to be provided in accordance with Condition 23 of the Conditions of Consent.
HMP				Condition 25 of the Conditions of Consent requires the submission of a habitat management plan to the Planning Authority.
Decommissioning				Details to be provided in accordance with Condition 8 of the Conditions of Consent.