Dunbeg South Extension Wind Farm

Environmental Statement

Design & Access Statement



power for good

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Introduction

The Proposed Development

1. This Design and Access Statement has been prepared by RES Ltd in support of a full planning application for Dunbeg South Extension Wind Farm, hereinafter referred to as the Development, located on lands to the north of A37 and to the west of the existing Dunbeg Wind Farm and lands to the south of A37 adjacent to a disused quarry, in the townlands of Dunbeg and Dunmore, 6.2km north east of Limavady, County Derry / Londonderry. Please see **Figure 1: Site Location**.
2. The Development comprises 4no. three-bladed, horizontal axis wind turbines, each up to a maximum of 149.9m to tip height; associated electricity transformers; underground cabling; access tracks; turning heads; site entrances; crane hardstandings; control building and substation compound and off-site areas of widening to the public road and all ancillary works. 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.
3. The proposed development is shown in Figure 2: Infrastructure Layout.

The Applicant

4. The application for planning permission is made by RES ('the Applicant').
5. RES is the world's largest independent renewable energy company. At the forefront of the industry for 40 years, RES has delivered more than 23GW of renewable energy projects across the globe and supports an operational asset portfolio exceeding 10GW worldwide for a large client base. RES is active in 11countries working across onshore and offshore wind, solar, energy storage and transmission and distribution. RES has developed 26 onshore wind farms in Northern Ireland totalling in excess of 400MW and operates over 134MW of wind capacity across Northern Ireland.
6. RES has developed 16 onshore wind farms in Northern Ireland totalling 229 MW, which equates to 36% of Northern Ireland's onshore wind capacity. RES currently operates over 83 MW of wind capacity across Northern Ireland, has secured planning permission for a further 112 MW awaiting construction and has 92 MW in the planning system.

The Requirement for a Design & Access Statement

7. This statement is provided in accordance with Section 40 (3a&b) of the Planning Act (Northern Ireland) 2011 and Article 6b of the Planning (General Development Procedure) Order (Northern Ireland) 2015, which require applications for Major Developments, or applications within a designated area and comprising a building or buildings where the floor space created exceeds 100 m2, to be accompanied by a

Design and Access Statement. The Development is a Major Development application. In addition, the application site falls within the Binevenagh Area of Outstanding Natural Beauty (AONB) and compromises a wind farm containing a control building & substation with an area of hardstanding.

8. The requirement for Design and Access Statements is in response to the recognised need to secure positive place making, incorporating good design and access and contributing towards the government objective of promoting sustainable development. A Design and Access Statement should:

- Explain the design principles and concepts that have been applied to the development;
- Demonstrate the steps taken to appraise the context of the development and how the design of the development takes that context into account;
- Explain the policy or approach adopted to access and in particular, how the policies relating to access to, from and within the development have been taken into account;
- Demonstrate how policies relating to access in the local development plan have been taken into account and any specific issues which might affect access to the development for disabled people have been addressed;
- Describe how features which ensure access to the development for disabled people will be maintained;
- State what if any consultation has been undertaken on issues relating to access to the development and what account has been taken of the outcome of any such consultation;
- Explain how any specific issues which might affect access to the development have been addressed; and
- Explain the design principles and concepts that have been applied to take into account environmental responsibility.

9. This Design and Access Statement will therefore demonstrate that the Development is responsive to both its surrounding context and local development plan policies incorporating the requirements as laid out in Article 6 of the Planning (General Development Procedure) Order (Northern Ireland) 2015 and Development Management Practice Note 12 – Design and Access Statement (April 2015).

Development Context

Physical Context

10. The Site is located on lands to the north of A37 and to the west of the existing Dunbeg Wind Farm and lands to the south of A37 adjacent to a disused quarry, in the townlands of Dunbeg and Dunmore, 6.2km north east of Limavady, County Derry / Londonderry. The location of the Development is shown in **Figure 1: Site Location.**

11. The Site is currently used for rough sheep and cattle grazing and primarily comprises improved agricultural land, semi-improved grassland, marshy grassland and shrub, with an isolated area of wet modified bog in the southern portion of the site. The Site is open and exposed to the west but is bounded to the south by areas of coniferous forestry and bounded to the north east by existing wind farms.

Planning Policy Context

PPS 1 – General Principles (March 1998)

12. PPS 1 sets out the general principles that the Department observes in making development management decisions and also establishes the requirement to secure high quality design in new developments with a desire to ensure that the relationship with surrounding spaces is considered.

PPS 3 – Access, Movement and Parking (February 2003)

13. Policy AMP 2 states that "Planning permission will only be granted for a development proposal involving direct access, or the intensification of the use of an existing access, onto a public road where such access will not prejudice road safety or significantly inconvenience the flow of traffic".

PPS 13: Transportation and Land use

14. Planning Policy Statement, PPS 13 "Transportation and Land Use" has been prepared to assist in the implementation of the RDS. It will guide the integration of transportation and land use, particularly through the preparation of development plans and transport plans, prepared respectively by Causeway Coast & Glens BC and DfI Roads. It will also be a material consideration in dealing with individual planning applications and appeals. The main objective of PPS13 is to integrate planning and transport at the national, regional, strategic and local level and to promote "a modern, sustainable, safe transportation system which benefits society, the economy and the environment and which actively contributes to social inclusion and everyone's quality of life."

PPS 21 – Sustainable Development in the Countryside (June 2010)

15. Policy CTY1 states that non residential development in the country side will only be permitted if there are overriding reasons why the development is essential in that location. It goes onto to state that renewable energy projects are acceptable in the countryside with the proposed buildings in this instance required for the operation of the Development. The policy also requires that appropriate proposals for drainage and access are included.

16. Policy CTY14 states that a new building in the countryside will be unacceptable where it

- Is unduly prominent in the landscape; or
- Results in suburban style development; or
- It does not respect traditional patterns or settlement; or
- It creates or adds ribbon development; or
- The impact of ancillary works would damage the rural character.

Planning Strategy for Rural Northern Ireland

17. Policy DES 4 Areas of Outstanding Natural Beauty requires that development proposals within an AONB should be sensitive to the distinctive character of the area. In applying this, account should be given to the economic and social welling being of those living within the AONB and the needs of local communities. Respect should be given to the traditional architectural styles and settlement patterns in these areas.

Building on Tradition – A sustainable Design Guide for the Northern Ireland Countryside (May 2012)

18. This document is intended to support PPS 21 and offer guidance on its implementation. The relevant sections are 4, relating to visual integration and 6, on new buildings in the countryside.

Local Policy

19. The Site falls within the Causeway Coast & Glens Borough Council area and is located within the Binevenagh AONB. The relevant local development plan is the Northern Area Plan (2016).

20. In terms of specific policies relating to access, the Protected Routes Network seeks to maintain the efficiency and safety of main road system between the Regions towns. The Broad Road (A37) Gortcorbies is under consideration as part of Proposal TRA 1: Rural Route Protection, with a view to improving the overtaking opportunity towards Coleraine.

21. The plan also identifies PPS 3 (summarised earlier in this section) and DCAN 15: (2nd Edition) Vehicular Access Standards, as relevant guidance, both of which were taken into account in the design of the access to the Development.

Design Statement

Site Selection

22. The design of a wind farm is optimised in order to produce a layout that maximises the use of the land available for wind power generation balanced against the overall environmental impact of the development. The optimal layout of a wind farm depends on a range of technical, economic and environmental criteria. There following are site specific factors determining the viability of a wind farm:

- Wind Speeds/Energy Yields: Sufficiently high wind speeds to ensure energy production from the wind turbines that would yield an adequate return on investment;
- Planning: A site which complies with planning policy and in particular, avoids unacceptable effects on areas designated by statutory agencies; maintains appropriate distances from dwellings to avoid unduly impacting local amenity and; avoids impeding or interfering with major electromagnetic transmission and airport communication systems;
- Area of Site: A site must have sufficient area to accommodate the number of wind turbines required for economic viability;
- Access: Adequate vehicular access to a site using existing roads wherever possible to minimise the amount of civil works, particularly during the construction phase;
- Local Terrain and Topography: Terrain and topography affect wind flow across a site and need to be considered in relation to turbine performance, specification and life-span;
- Ground Conditions: A site must have suitable ground conditions for the construction of wind turbine foundations, erection of the machines and the provision of access tracks and cables.

Design Principles

23. There are additional factors which also influence the scale and viability of a wind farm including:

- Turbines must be separated by specific distances both perpendicular to, and in line with, the prevailing wind direction to minimise turbulent interaction between the wind turbines (i.e. wake effect). This needs to be considered to balance turbine performance with energy extraction, and to protect the life-

span of the turbines. Spacing requirements vary between turbine manufacturers and are also subject to wind conditions;

- Wind turbines have to be located at a distance sufficiently far from occupied residential property to ensure adherence to relevant noise criteria and to ensure that shadow flicker impacts are minimised;
- The implications of locating turbines near environmentally sensitive features and areas (ecology, archaeology, hydrology etc.) need to be carefully considered; and
- Landscape and visual design considerations, including potential cumulative effects, need to be taken into account.

24. The apportioning of weight to each element is a site-dependent consideration and results in bespoke design approaches and strategies for each site.

25. For the Proposed Development, the upland nature of the Site creates a number of sensitivities that need to be carefully addressed through appropriate design of the wind farm. The following sections identify potential issues and outline how these have been addressed through appropriate design.

26. The basis of the design process is the evaluation of the various constraints that have been identified through the environmental surveying that was undertaken at the Site. The constraints identified through these surveys, along with other technical constraints and appropriate buffers are presented in Figure 3: Combined Constraints and Infrastructure and are discussed in the layout evolution sections of this chapter.

Potentially significant effects

27. Following consultation and baseline characterisation of the Site, the following key environmental issues have been identified:

- Landscape and visual, including relationships with neighbouring wind farms
- Archaeology and cultural heritage
- Peatland and vegetation
- Fauna, including ornithology and fisheries
- Geology and the water environment
- Noise and shadow flicker
- Traffic and transport.

28. The issues listed above will be considered through design with the aim of designing out significant effects. Where it is not possible to mitigate by design, the issues are considered further as part of this Environmental Impact Assessment (EIA).

Consultation

29. Prior to and during the production of this Environmental Statement (ES), RES and the Consultant project team have consulted with various stakeholders and where appropriate incorporated the outcome of this into the various chapters of this ES.

30. Throughout the EIA process, continual scoping has occurred to ensure that the ES fully, but concisely, addresses all potentially significant issues.

31. Details of consultation undertaken in the preparation of each of the technical chapters of this ES (chapters 4 to 12) are presented in the relevant chapter.

Public Consultation

32. RES is committed to finding effective and appropriate ways of consulting with all its stakeholders, including local residents and community organisations, and believes that the views of local people are an integral part of the development process. RES began the engagement process with the local community in March 2024 to facilitate a constructive consultation process which helped RES to understand and address any concerns as the project developed.

33. The public exhibition was held on the 11th of April 2024 which included detailed maps and information about the proposals, including: a map of the proposed layout; photomontages representing how the proposed layout would appear from a range of viewpoints, and Zone of Theoretical Visibility (ZTV) drawings. (A ZTV is a map-based diagram of where and how many wind turbines, or wind farms, would theoretically be visible from all parts of a given area.) RES staff were available for telephone/video conference meetings to answer questions and feedback was encouraged.

34. A Pre-Application Community Consultation (PACC) Report has been produced and is available for viewing at the locations listed in the Preface.

Alternatives

35. RES considers a range of potential options when selecting and designing wind farm sites. The following sections outline the broad design alternatives that have been considered in terms of the EIA Regulations.

Do-Nothing Alternative

36. The “do-nothing” scenario is a hypothetical alternative considered as a basis for comparing the potential significant effects of a development proposal. In the case of the Proposed Development the “do-nothing” scenario would be to have the Site continue to be managed for sheep grazing by the landowners. It is likely that

current land management activities such as grazing, would continue and are likely to cause further degradation to the habitats on the Site in the future.

Alternative Sites

37. RES has a robust site selection methodology, using a Geographical Information System (GIS) to aid identification of potential wind farm sites.

38. The GIS model was used to identify potential constraints which could restrict development, or would need to be addressed in the design process.

Alternative Layout Designs

39. There have been several iterations of the turbine and infrastructure layouts. From the outset the following design principles have been employed when making design decisions:

- Mitigation by design should be the principle method of reducing potential environmental impacts
- Utilisation of existing infrastructure should be implemented whenever possible to avoid unnecessary development
- All site infrastructure should be designed as efficiently as possible to reduce the overall extent of development whilst maximising the renewable energy generation potential.

40. A key tool in the design process is the combined constraints drawing which integrates all potential constraints that need to be considered in the design process. The finalised combined constraints map is shown as Figure 3.

41. The combined constraints drawing is iteratively updated as new information from surveys, site visits and consultation is received. The following surveys informed the combined constraints drawing and design evolution process:

- Breeding and wintering bird survey
- Ornithological vantage point survey
- Phase 1 habitat survey and National Vegetation Classification (NVC) Phase 2 survey
- Terrestrial fauna surveys
- Fisheries survey
- Peat probing, peat management plan and peat slide risk assessment
- Hydrology assessment
- Archaeology and cultural heritage surveys
- Landscape field survey
- Transport and traffic reconnaissance trip
- Technical and engineering site walkovers.

42. The final site layout for the Proposed Development (Figure 5: Infrastructure Evolution Design 3) reflects the need to optimise the energy yield whilst paying due regard to environmental and technical sensitivities. Wind farm design is an iterative process and is influenced by potential environmental effects identified throughout the EIA process: policy recommendations; environmental, technical, engineering and landscape design considerations; and as a result of feedback from consultees.

43. The Design Evolution section of this chapter describes the evolution of the turbine and infrastructure layouts.

Design Evolution

Turbine Layout

44. There were three principle iterations of the turbine layout, shown in Figure 4: Turbine Layout Evolution, which were developed at the following three stages in the project process:

- Initial feasibility/screening stage, when turbines were located based on preliminary constraints only, with baseline environmental surveys underway but not yet completed.
- EIA baseline data stage, when layouts were developed in response to baseline survey information and resulting constraint information.
- Further environmental assessment and refinement, when further, more detailed assessment was carried out on specific issues highlighted and refinements were made to the layout as a result.

Initial Feasibility Stage

45. At the beginning of the development process an initial layout was produced to show the maximum potential extent of the development within the space available and in accordance with the design principles and preliminary environmental information, prior to baseline surveys being completed. The layouts were informed by the following constraints:

- Preliminary ecological constraints
- Preliminary watercourse buffers
- Slope
- Separation from housing
- Tip height + 10% to public roads, in accordance with the Best Practice Guidance to PPS 18[1].

[1] Best Practice Guidance to Planning Policy Statement 18: Renewable Energy, DOE Planning & Environmental Policy Group, August 2009.

46. This identified that the Site could potentially accommodate 5 turbines, to be further refined throughout the EIA process. This is Layout 1 in Figure 4.

EIA Baseline Data Stage

Combined Constraints

47. Detailed environmental and technical surveys were completed to characterise the baseline environmental conditions on the Site and associated study areas, as described in more detail in chapters 4 to 12 of this ES. Any constraints to development, or avoidance areas, resulting from the baseline surveys were used to build up the combined constraints drawing.

48. Key constraints informing the layout are listed in the following sections. Further details on baseline surveys and mitigation by design are included in each technical chapter (Chapters 4 to 12).

49. The final Combined Constraints are shown in Figure 3 Combined Constraints.

Water Environment and Fisheries

50. Following the baseline survey the hydrology consultant recommended watercourse buffers of 50 m and 10 m depending on the sensitivity of the watercourse, which were agreed as appropriate by the fisheries consultant. Potential private water supplies in the area were also identified and buffer of 250m applied.

Terrestrial Fauna

51. A 25 m buffer was applied to a badger setts identified through the baseline surveys. Note that these are not marked on Figure 3 as their location is confidential.

52. All turbines have been positioned to maintain a minimum 50m buffer distance from the tip of the turbine blade to the top of the adjacent habitat feature. This is based on a (blade length of 58.5m, hub height of 91.4m and varying feature heights).

Public Roads and Overhead Electricity Lines

53. Buffers were applied to nearby public roads in line with the Best Practice Guidance to PPS18 which recommends a setback distance of at least tip height plus 10% between turbines and roads.

54. In keeping with the Energy Networks Association (ENA) L44 Issue 1 dated 2012 “Separation of Wind Turbines- Principles of Good Practice” a buffer of tip height plus %10 was applied to a 33kV overhead line crossing the Site.

Archaeology and Cultural Heritage

55. In consultation with the Archaeology and Cultural Heritage consultant the layout of Proposed Development has been designed to avoid significant effects on archaeological heritage assets in conjunction to appropriate mitigation.

56. Chapter 5: Archaeology & Cultural Heritage of the ES considers in detail the impact of the Proposed Development on the setting of a number of assets.

Mast in Southern Section of the Site

57. Following consultation the mast operators (located in the southern portion of the site) T1 was moved north west to allow sufficient fall-over distance buffer from the mast located in the southern portion of the site, this change was completed from Layout 1 to Layout 2 in Figure 4.

Peat Assessments

58. Following baseline peat probing and peat slide risk assessment, areas of deeper peat were avoided to limit excavation and spoil generation. It was agreed that further assessments were required before the layout could be finalised.

Landscape & Visual

59. Zone of Theoretical Visibility (ZTV) visualisations were prepared in order to indicate where all, or part of, the Proposed Wind Farm Development is likely to be visible from. The ZTV is first used to assist the identification of areas with theoretical visibility and the location of viewpoints as part of the baseline landscape and visual assessment. It is then used to aid the assessment of visual effects because the turbines would be the most visible element of the Proposed Wind Farm Development, particularly during the operational period. As described in earlier sections they are also useful in considering alternative turbine heights and geometries.

60. At an early stage of the EIA process a provisional list of viewpoints was created, from which provisional wirelines were generated, which were used to identify any potential landscape and visual issues with the turbine layout, as well as from the effects of the wind farm as a whole.

61. The presence of outlying turbines was addressed in the iterative design process and efforts were made to minimise instances where turbines were located at some distance or at noticeably different heights from the main grouping of turbines in order to create a compact layout that minimised the geographical extent and variable height within the Proposed Development whilst also maintaining an evenly spaced layout where turbine heights instances of stacking where also minimised.

62. The final turbine layout as shown in Layout 3 of Figure 4 was assessed via a cumulative ZTV (as shown in Chapter 4 Figure 4.8, page 1 of 3) which indicated additional theoretical visibility across only 0.04% of the 30 km Study Area which would not already have theoretical visibility of other turbines in the Keady Cluster, all of which are either operational or consented.

Further assessment and refinement stage

63. The turbine layout was reviewed and refined in response to further assessment actions identified by consultant review and from the collaborative site visit, including the following:

- Noise assessment, based on the background noise survey
- Shadow flicker assessment
- Archaeological assessment
- Further ecological assessment
- Further peat stability assessment
- Engineering considerations

Noise and Shadow Flicker Assessments

64. Layout 1 was reviewed, it was recommended that T5 was moved south in order to increase the separation distance to houses, reduce noise and shadow flicker impacts. Full details of the noise and shadow flicker assessments are given in Chapters 10 and 12 respectively. Both chapters conclude that with appropriate mitigation there would be no significant effects on surrounding properties.

Water Environment

65. In addition to potential noise & shadow flicker constraints in section 3.48 it is noted that in Layout 1 in Figure 4 that T4 is located within the watercourse buffer. Therefore it was agreed to move T4 out of the T4 out of the watercourse buffer. This change is noted in Layout 1 to Layout 2 in Figure 4.

Peatland

66. An area of deeper peat were encountered in the location in which T4 was positioned in Design 2 of Figure 4. This resulted in the northern portion of the site having a number of constraints which made it unfeasible to have 5 turbines across the site. It was advised to remove T5 from the layout and reposition T4 out of the areas in which deeper peat were encountered. This change is noted in Layout 2 to Layout 3 in Figure 4.

Ecology

67. In addition to the decision to remove T5 due to noise, shadow flicker and peat constraints, it was also evident that by removing T5 this enabled T1 (which had the highest levels of bat activity) being moved approximately 188m WNW of its original location. This open area away from former treelines and the old quarry is considered to be of much lower risk to bats.

Collaborative Site Walkover

68. A second multidisciplinary site walk-over was arranged by RES, involving engineering, ecology, peatland, geology and water environment specialists to collaboratively review and refine the layout, discuss interrelationships and mitigation, resolve potential conflicts and agree actions for further assessment. It was agreed to that by moving T4 west out of the area of deeper peat, it would also result in T4 being located in a flatter area of land, thereby reducing the amount of earthworks necessary. Refinements were made to the infrastructure layout, which are detailed later in this chapter.

69. Layout 3 on Figure 4 shows the resulting layout.

Final Turbine Layout

70. The final turbine layout is shown in Layout 3 of Figure 4 and consists of 4 turbines of 149.9m tip height. The final layout, including turbines and infrastructure along with the combined constraints is shown in Figure 3. This demonstrates that every effort was taken to reduce impacts from the proposed development, as although the site could have accommodated 5 turbines, less impacts would be realised with 4 turbines.

71. A 50 m micrositing radius was applied to each of the turbines. The extent of this micrositing area was then reduced such that the micrositing avoids any of the combined constraints. The final micrositing areas are included in Figure 2: Infrastructure Layout.

Infrastructure Design Evolution

72. The infrastructure design has evolved through the EIA process as illustrated in Figure 5: Infrastructure Design Evolution, Designs 1 to 3. Design 3 is the final design, which forms Figure 2 Infrastructure Layout.

Engineering considerations

73. The following general principles were taken into consideration when designing the supporting infrastructure:

- Provision of two options for site entrances and associated tracks to enable southern section of proposed development to be accessed via consented Dunbeg South Wind Farm, or separately via a new entrance
- Avoidance of environmental and technical constraints (as shown in **Figure 3**)
- Design of the track layout to follow natural contours as far as possible, in order to avoid unnecessary amounts of excavation and reduce adverse hydrological impacts
- Minimisation of the overall length of access track
- Minimisation of the number of watercourse crossings, as far as possible

- Avoidance of steep slope areas to minimise earthworks
- Incorporation of measures to improve the visual appearance of the scheme, including reinstatement of some elements of temporary infrastructure following the construction period, reinstatement of road widening areas, and consultation with the landscape consultant on the position of the control room and substation building.

74. As well as the turbine positions, the layout of infrastructure was also a key consideration in the collaborative site walkovers described earlier in this chapter.

75. Key adjustments in response to constraints made through the design evolution are summarised in the following sections.

Vegetation and Peatland

76. Following the advice of the vegetation and peatland specialist a number of refinements were made to the track layout in order to minimise impacts to blanket bog habitats and deep peat including the following:

- Following the removal of T5 from Layout 2 to Layout 3, T4 was moved west away from areas in which deeper peat (depths greater than 1.5m), the infrastructure track from the northern entrance to T4 was orientated in a way to avoid the areas of deep peat
- Design of site track (Option 2) to avoid wet modified bog in the southern portion of the site (as seen in Design 3 in **Figure 5**)

Water Environment

77. The location and nature of watercourse crossings were reviewed with the hydrology and fisheries consultants. Following the mitigation detailed in Chapter 8: Fisheries and Chapter 9: Geology & Water Environment,

78. A number of refinements were made to avoid and reduce potential effects as far as possible, including the following:

- Reorientation of track from the northern entrance to T4 and movement of temporary construction compound to southern portion of the site to move the compound out of the watercourse buffer within the northern portion of the site.

Site Entrance Location

79. The entrance to the northern portion of the site was chosen given the presence of an existing entrance (to a vacant house) and the presence of suitable sightlines, this entrance remained in position from Design 1 to Design 3 (Final Layout).

80. In Design 1 (Figure 5) the site entrance to the southern portion of the site was located in the south eastern portion of the site, however it was noted on a site

walkover that to achieve adequate sightlines at this location, significant levels of excavation would have been required to achieve this. Therefore the site entrance in Design 1 was removed, and subsequently the entrance to the southern portion of the site was located opposite the entrance to the northern portion of the site as demonstrated in Design 2.

81. In order to minimise impacts the proposed development, Design 3 was developed, which has an option (Option 1) to use the existing infrastructure from Dunbeg South Wind Farm to enable an entrance to the southern portion of the proposed development. In the unlikely event that the Dunbeg South Wind Farm is not constructed Design 3 (Final Layout) has a second entrance option (Option 2) opposite the entrance to the northern portion of the site.

Wind Farm tracks and Turbine Hardstandings

82. The tracks within Design 1 were developed in accordance with the site entrance to the southern section being located in the eastern portion of the site. Following revisions to the site entrance between Design 1 and Design 2, traffic would no longer be accessed from east to west, therefore the understandings at T1 and T2 were reorientated to accommodate the direction change of turbine construction vehicles reaching the locations.

83. To enable potential access to the southern section of Dunbeg South Extension from the original consented Dunbeg South site, additional track was added from Design 2 to Design 3 in Figure 5 Infrastructure Evolution. The two additional tracks (Proposed Site Track Option 1) run from T2 to the south west and T1 to the south, heading into the consented track at the consented Dunbeg South Wind Farm. An additional site entrance option (Entrance to Southern Section Option 2) and internal track option (Proposed Site Track Option 2) was added to Design 3 to accommodate that the current proposed development can be accessed and all turbines can be accessed separately, in the unlikely event that Dunbeg South Wind Farm is not constructed and the current proposed development will not be accessed via Dunbeg South. The Proposed Site Track Option 2 was located in a manner to avoid the habitat constraint identified by the ecologist, located in the southern portion of the site, shown in Figure 3.

84. The track in the northern portion of the site was redesigned from Design 1 to Design 2 following the movement of T4 and T5 between Layout 1 and Layout 2 of Figure 4 Turbine Evolution. Following the removal of T5 as shown in Layout 3 of Figure 4 Turbine Evolution, the track previously connecting T4 & T5 was removed. The track in Design 3 was orientated in such a way to ensure that no permanent hardstandings would be located within the watercourse buffers. In addition, the track was designed to minimise the amount of material to be disturbed as part of the works.

Temporary Construction Compound and Control Building & Substation

85. The temporary construction and Control Building & Substation was initially located in the southern portion of the site, near the proposed entrance in the south eastern portion of the site as shown in Design 1 Figure 5 Infrastructure Evolution. However, design evolution resulted in the entrance in south eastern portion of the site being removed from Design 1 to Design 2, and therefore the temporary construction compound and Control Building & Substation was no longer suitable at this location, therefore the Control Building & Substation were relocated.

86. In Design 2, the temporary construction compound and control building & substation were located in the northern portion of the site between T4 & T5 as it was determined that at this location the compounds and substation would be less visual. However, given the watercourse constraints identified in section 3.61, the temporary construction compound could not be located in this area. In addition, given that three of the four turbines were located in the southern portion of the site and therefore the majority of works would be completed in the southern section of the site.

87. The final location of the Temporary Construction Compound, Control Building and Substation are shown in Design 3. This location was selected given the lack of constraints and relatively flat nature of this area of land, which would therefore limit the amount of earthworks required.

88. The buildings will be designed in a manner that is sensitive to the immediate landscape character with regards to location, scale, colour, and choice of materials.

Final Infrastructure Layout

89. The final infrastructure layout is shown in Design 3 of Figure 5. Once finalised, the Planning Application Boundary was drawn, ensuring sufficient space within the boundary for all features.

90. The final Infrastructure Layout and combined constraints is shown in Figure 3.

Other Design Considerations

TV interference

91. Wind turbines can potentially interfere with communication systems that use electromagnetic waves as the transmission medium (e.g. television, radio or microwave links). Wind turbines therefore may cause interference to television reception in the proximity of a wind farm, primarily for receptors in the 'shadow' of the turbines with aerials pointing through the wind farm, causing loss of picture detail, loss of colour or loss of audio. Microwave links can also be affected by the

reflection, scattering, diffracting and blocking of the electromagnetic signal caused by wind turbines.

92. If the Proposed Wind Farm Development is consented, RES would agree a scheme of assessment and mitigation with the planning authority to be implemented in the case of complaints associated with television reception. Should interference to reception occur as a result of the Proposed Wind Farm Development, a range of viable mitigation measures can be considered, with the most suitable method chosen on a case by case basis. Any necessary work would be undertaken in a timely manner following receipt of a valid complaint, and would be funded by the wind farm operator.

Electromagnetic Interference

93. RES has consulted with all organisations operating microwave links which could be affected by the Proposed Development and these are listed in Table 3.1.

94. The proposed Dunbeg South Extension turbines are clear of any microwave links and no objections were raised

95. A telecommunications mast situated within the site boundary is operated by Telefonica / Virgin Media O2. There are no concerns regarding electromagnetic interference and only topple distance (110% of tip height) is to be observed, which was incorporated in the layout design accordingly.

Aviation

96. Wind turbines can potentially interfere with aviation operators by either physically affecting the safeguarding of an aerodrome by the close proximity of the turbines or through interference with the Air Traffic Control (ATC) radars that direct aircraft in flight. RES has consulted with all relevant organisations which could be affected by the Proposed Wind Farm Development.

97. NATS En Route (NERL) supplies air traffic service to all En Route aircraft navigating UK airspace. RES has consulted the published NATS safe-assessment maps which have been produced to indicate if a wind farm development will impact NERL infrastructure. The Proposed Wind Farm Development lies outside the safeguarding areas which identify need for further consultation with NERL and therefore the Proposed Wind Farm Development will have no impact on NERL infrastructure.

98. The Defence Infrastructure Organisation (DIO) consultation response stated that the Ministry of Defence (MOD) had concerns with regards to the Proposed Development given the potential to create a physical obstruction to air traffic movements. To address impact up on low flying given the location and scale of development, the MOD would require that conditions are added to any consent issued requiring that the development is fitted with aviation safety lightning and that sufficient data is submitted to ensure that structures can be accurately charted to allow

deconfliction. As a minimum the MOD would require that the individual turbines are fitted with 25cd infra-red (IR) lighting.

99. Table 1 notes the pre-submission consultation that was undertaken with airport located in close proximity to the Proposed Wind Farm Development; Derry City Airport. Derry City Airport indicated that a full Instrument Flight Procedure (IFP) Safeguarding assessment will be required to establish the exact infringement, its magnitude and any possible actions that could be used to mitigate this infringement, reducing that safety impact.

100. As no anticipated detrimental impact upon any aviation stakeholder has been identified it is considered that there will be no additional impact created when considered cumulatively with other existing, consented or proposed wind farms.

Table 1: EMI and Aviation Consultation Summary

Consultee	Date of Consultation	Nature and Purpose of Consultation
Atkins Global on behalf of NI Water	February 2024	Check for EMI impact – no concerns
BT	September 2023	Check for EMI impact – no concerns
Joint Radio Company	September 2023	Check for EMI impact – no concerns
Telefonica / Virgin Media O2	February 2024	Check for EMI impact – no concerns as long as topple distance is observed.
Defence Infrastructure Organisation	August 2024	Check for aviation impact – Concerns regarding potential for causing physical obstruction to air traffic. As a minimum, individual turbines should be fitted with 25cd IR lighting. Sufficient data should be supplied to ensure that structures can be accurately charted to allow deconfliction.
Derry City Airport	September 2024	Check for aviation impact – Concerns regarding exact magnitude and infringement and possible actions to mitigate infringement.

Access Statement

101. A full assessment of the potential impact of the Development on traffic and transport is provided in ES Volume 2, Chapter 11: Traffic and Transport.

102. The following key considerations were taken into account during the design and assessment of access arrangements for the Development, including relevant policy and guidance:

- Access routes for abnormal indivisible loads (AIL), normal construction traffic and associated road improvements
- The type and volume of traffic generated by the Development
- Identification of sensitive/critical locations along the delivery route

- Assessment of construction, operation and decommissioning traffic impacts
- Outline of suitable mitigation measures and the evaluation of residual impacts
- Cumulative impact of surrounding consented and proposed developments
- DOE – Planning Policy Statement 3 - Access, Movement and Parking (2005)
- DOE - Planning Policy Statement 18: Renewable Energy (2009)
- DOE - Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy' (2009)
- IEMA - Guidelines for the Environmental Assessment of Road Traffic (1993)

103. Consultation with stakeholders relevant to traffic, roads and infrastructure on and near the delivery routes were undertaken. The feedback from this consultation process helped to clarify the local transport strategy, identify issues of specific local importance and gather basic information on local infrastructure and structures. RES has consulted with Department of Infrastructure (DfI) Roads. A summary of consultation responses and proposed mitigation measures are included in ES Volume 2, Chapter 11: Traffic & Transport.

Site Entrance

104. The site entrance to access the northern portion of the site (T4) has been chosen due to the location of the historic access (associated with an unoccupied building and agricultural enclosures), which provides direct access to existing site tracks.

105. Two options are available to access the southern portion of the site (T1, T2, T3). Option 1 – the southern section of the site may be accessed via the existing Dunbeg South Wind Farm site which has already achieved planning consent (LA01/2022/0981/F & LA01/2018/0200/F). This would be achieved by the tracks from Dunbeg South Extension joining the Dunbeg South tracks as follows; track running south from T1 (Dunbeg South Extension) would join to the track to the east of turbine T9 from Dunbeg South (Option 1a), and the track running south west from T2 at Dunbeg South Extension would join the track to the north of Dunbeg South turbine T8 (Option 1b), as shown in **Figure 2 – Infrastructure Layout – Option 1**.

106. Option 2 - the southern portion of the Dunbeg South Extension turbines (T1, T2, T3) may also be accessed via the Broad Road, with the southern access being located immediately south of the northern access, as shown in **Figure 2 – Infrastructure Layout – Option 2.**

107. Visibility splays of 215 m are readily achievable in both directions for vehicles exiting the Site at all entrance options. The site entrance has been designed to the requirements of Development Control Advice Note (DCAN) 15, 2nd Edition. The construction of wind farms have previously directly accessed the Broad Road (A37) for access and egress of both HGV and AIL deliveries (PAC 2009/A0363 (B/2007/0560/F)).

108. Consultation with stakeholders relevant to traffic, roads and infrastructure on and near the delivery routes were sent to DFI Roads, however no response was received. The route is similar to the approved Dunbeg South Site. Consultation response for the Dunbeg South site indicated that the route along which the current development proposed access is located is situated on a protected route and there is a proposal for a potential climbing lane. However, it is not that the location of the Dunbeg South Wind Farm entrance is unlikely to affect the climbing lane, and there is currently no allocated budget for the climbing lane scheme.

Site tracks

109. Two options for site track routes are also presented for the southern section of the site, the option elected will be dependent on which option is selected to access the southern portion of the site. **Figure 2 Infrastructure Layout** (Overview) presents the overview of both of the infrastructure options for the site. It is noted that only one of the Options will be developed (i.e. only if Option 1 is chosen then Option 2 will not be developed and vice-versa), this will be agreed prior to construction with Causeway Coast & Glens and the relevant roads authority. The preferred design is Option 1, however to ensure that the proposed development has been correctly assessed, the ES Chapters considers the impact of both options.

110. The Proposed Development would result in the construction of approximately 2.2 km of new track under Option 1, and 2.6km under Option 2. The running width of the track would be 4.5m on straight sections, with 0.25m wide shoulders on each side, totalling 5m. The permanent land take area for the new track would be approximately 14,308 m^2 under Option 1 or 19,192 m^2 under Option 2. This sharing of infrastructure will help to minimise the impact of the Proposed Development.

Delivery Routes

111. The proposed access route for AILs from Lisahally Port has been used previously for the construction of Dunbeg Wind Farm which also utilises access directly onto the Broad Road (A37). From Lisahally, the route will travel onto Maydown Road and turn east onto the Clooney Road and travel east for approximately 28km via both Greysteel and Ballykelly before bypassing Limavady town on the Ballykelly Road and travelling southeast onto Broad Road. The site entrances are located on the Broad Road. See **Figure 6: Turbine Delivery Route**.

112. The proposed return route for the delivery vehicles is similar to the proposed delivery route noted above. Once the turbine components have been delivered, the vehicles will be shortened so they are no longer than a typical articulated HGV.

113. Reinstatement will be undertaken to any street furniture which may be removed on a temporary basis. In the unlikely event that a replacement blade is required during the operational phase of the wind farm, the widenings at the site entrance will need to be reopened temporarily, after which they will be reinstated. Any works will be undertaken following consultation with DfI Roads.

114. It is proposed that Normal HGV load delivery routes (including stone and concrete) will travel to site from the A road network. Indicative HGV routes between the A37 and the Site are illustrated in **Figure 7: HGV Routes.**

115. Consideration has been given to the effect of increased HGV traffic flow on Severance, Driver Delay, Pedestrian Delay, Pedestrian Amenity, Fear and Intimidation, Accidents and Safety and Cumulative Impacts. Furthermore, consideration car parking has been given to the environmental effects of any road improvement/widening works.

116. The abnormal load route and the HGV routes have been assessed as acceptable in the ES. Taking into account the existing vehicle movements on the affected roads, and the proposed type and frequency of vehicle numbers, it is considered that with the appropriate mitigation measures as set out above, there will be no significant impacts.

Disability access

117. Disabled access to the buildings within the Development will be provided via ramps and suitable parking will be provided.

Sustainability

118. Sustainable design refers to the selection of an appropriate site for a particular development whilst ensuring that the architectural style is suitable for the site, so that the development will not detract from the sense of place. It incorporates the use of environmentally friendly materials and construction techniques as well as resource efficiency, all of which will help to minimise environmental impact whilst conserving local character and enhancing the viability of local communities.

119. The Design Statement section of this report details how the site was selected as appropriate, and describes how the layout of the Development has been carefully designed in order to minimise environmental effects.

120. In addition, the Development incorporates a host of mitigation measures as recommended in the technical chapters of the Environmental Statement Volume 2

(Main Report), further reducing environmental effects and incorporating best practice. Key measures include the following:

- A Peat Management Plan has been prepared in accordance with guidance issued by the Scottish Environmental Protection Agency (SEPA) and Scottish Renewables (ES Volume 1 Technical Appendix 1.5)
- The Site will adopt a surface water management plan/site drainage design using the principles of Sustainable Drainage, promoting the principles of on-site retention of flows and use of buffers and other silt removal techniques. All drainage-related mitigation measures proposed will be encompassed by a robust and proven Sustainable Drainage System (SuDS) design which will be used to control drainage and silt management on the Site. An outline SUDS Plan has been prepared (Contained within ES Volume 4 Technical Appendix 9).
- Prior to construction commencing a detailed Construction Environmental Management Plan (CEMP) would be agreed with the Department, describing the detailed methods of construction and working practices, work to reinstate the site following completion of construction activities and methods to reinstate the site post operation.

121. If approved, the Development could account for up to 16.8 MW of installed renewable electricity capacity. This is the equivalent of approximately 16,000 homes based on an output of 56 GWh.

122. A socioeconomic assessment of the Development was prepared by Oxford Economics. The development is estimated to result in a capital spend of £30.6 million. Of this, an estimated £11.8m will be realised with Northern Ireland. The 18 month construction phase is estimated to create or sustain between 49 direct job years of employment, with associated direct wages of between £1.7m and direct Gross Value Add of £3.9 million. For further details see ES Volume 2 (Main Report) Chapter 13: Socioeconomics.

123. Potential effects on local residents in terms of noise, shadow flicker, traffic and transport, have been considered in the design of the Development and assessed in the ES. Predicted effects were found to be acceptable with incorporation of the proposed mitigation.

124. RES is committed to finding effective and appropriate ways of consulting with all its stakeholders, including local residents and community organisations, and believes that the views of local people are an integral part of the development process. RES engaged early with the local community to facilitate a constructive consultation process. No feedback was received from the community consultation in relation to

the specific design/layout of the wind farm, and as such no modifications have been made in this regard. However the consultation process, assisted RES in gaining a greater understanding of any concerns the community may have and allowed us to consider these aspects as part of the design evolution and environmental assessment process.

125. Through the consultation process, we have taken the opportunity to engage with interested parties to facilitate public understanding of the potential impacts and benefits of the Development. A Pre-Application Community Consultation (PACC) Report has been submitted with the planning application.

Conclusion

126. This Design and Access Statement has presented the final design of the Development. It explains the design principles and concepts that have been applied to the development, demonstrating the steps taken to appraise the context of the development and how the design of the development takes that context into account whilst ensuring adherence with all relevant policies.

127. It has explained the approach adopted for access and in particular, how the policies relating to access to, from and within the Development have been taken into account. Arrangements relating to access to the development for disabled people have been addressed. It has also outlined the consultation process and its effects on the design.

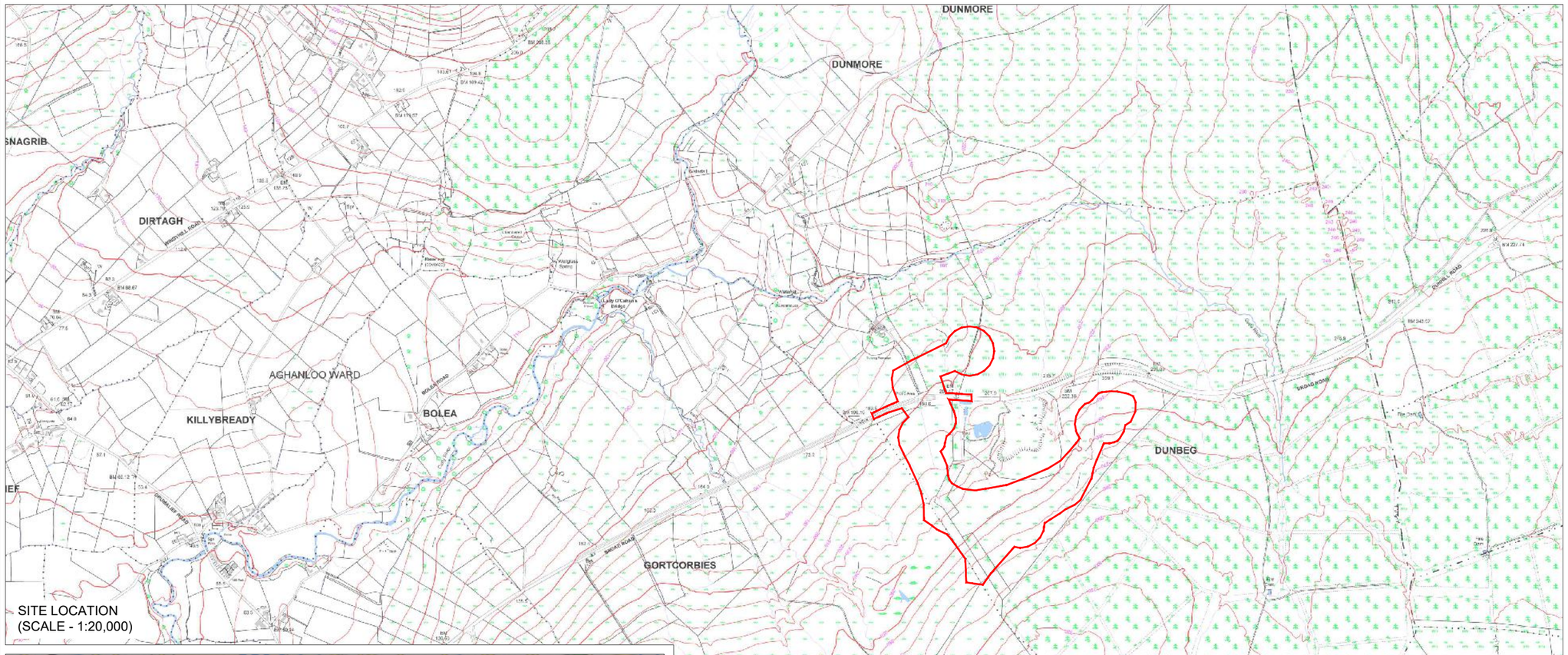
128. It has explained the design principles and concepts that have been applied to take into account environmental responsibility. In all instances sustainability has been considered to ensure the selection of an appropriate site for the development whilst ensuring the wind farm layout and architectural style of the buildings are suitable for the site, so that the development will not detract from the sense of place. The design has also considered the use of environmentally friendly materials and construction techniques, as well as resource efficiency, all of which will help to minimise environmental impact whilst conserving local character and enhancing the viability of local communities.

129. The resulting Development layout includes the following features:

- A movement to fewer but larger turbines, reducing the scale of the development and decluttering the visual appearance
- Reduction of impacts on environmental, technical and engineering constraints and sensitivities identified through site survey and consultation
- Reduction in overall land take and ground disturbance through careful design of site infrastructure including tracks and crane hardstandings

- A building that is integrated and sympathetic to its setting in the surrounding landscape
- An access that is well placed to reduce both visual impact and impact on road users
- A development which is sustainable and environmentally responsible.

Figures



SITE LOCATION
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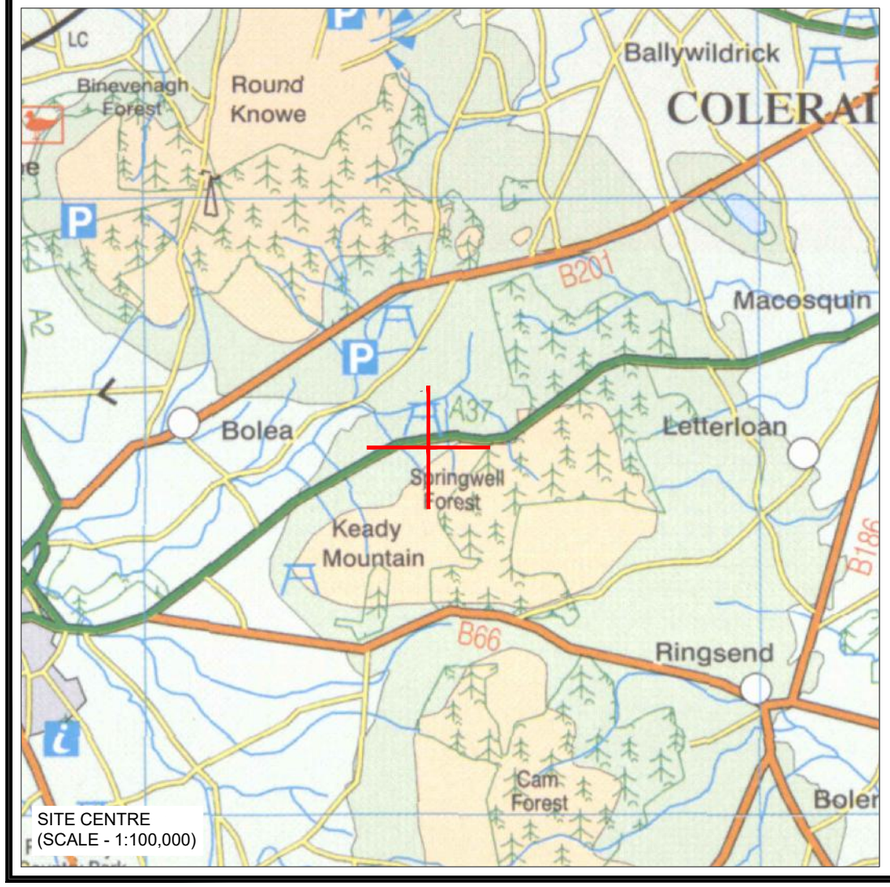

SITE CENTRE
(SCALE - 1:100,000)

DUNBEG SOUTH EXTENSION WIND FARM

FIGURE 1

SITE LOCATION PLAN

SITE BOUNDARY

SITE CENTRE

LAYOUT DWG: N/A	T-LAYOUT NO.: N/A
DRAWING NUMBER: 05214-RES-LAY-DR-XX-003	REV: 0

SCALE - AS SHOWN @ A3

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DUNBEG SOUTH EXTENSION WIND FARM

FIGURE 2

INFRASTRUCTURE LAYOUT (OVERVIEW)

- SITE BOUNDARY
- WIND TURBINE
- PROPOSED SITE TRACK
- PROPOSED SITE TRACK (OPTION 1)
- PROPOSED SITE TRACK (OPTION 2)
- DUNBEG SOUTH TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
- SMALL CONSTRUCTION COMPOUND
- CONTROL BUILDING & SUBSTATION COMPOUND WITH HARDSTANDING AREA
- ENTRANCE TO SOUTHERN SECTION (OPTION 1a)
- ENTRANCE TO SOUTHERN SECTION (OPTION 1b)
- ENTRANCE TO NORTHERN SECTION
- ENTRANCE TO SOUTHERN SECTION (OPTION 2)

LAYOUT DWG: N/A	T-LAYOUT NO.: N/A
DRAWING NUMBER: 05214-RES-LAY-DR-PE-001	REV: 3

SCALE - 1 : 10,000 @ A3

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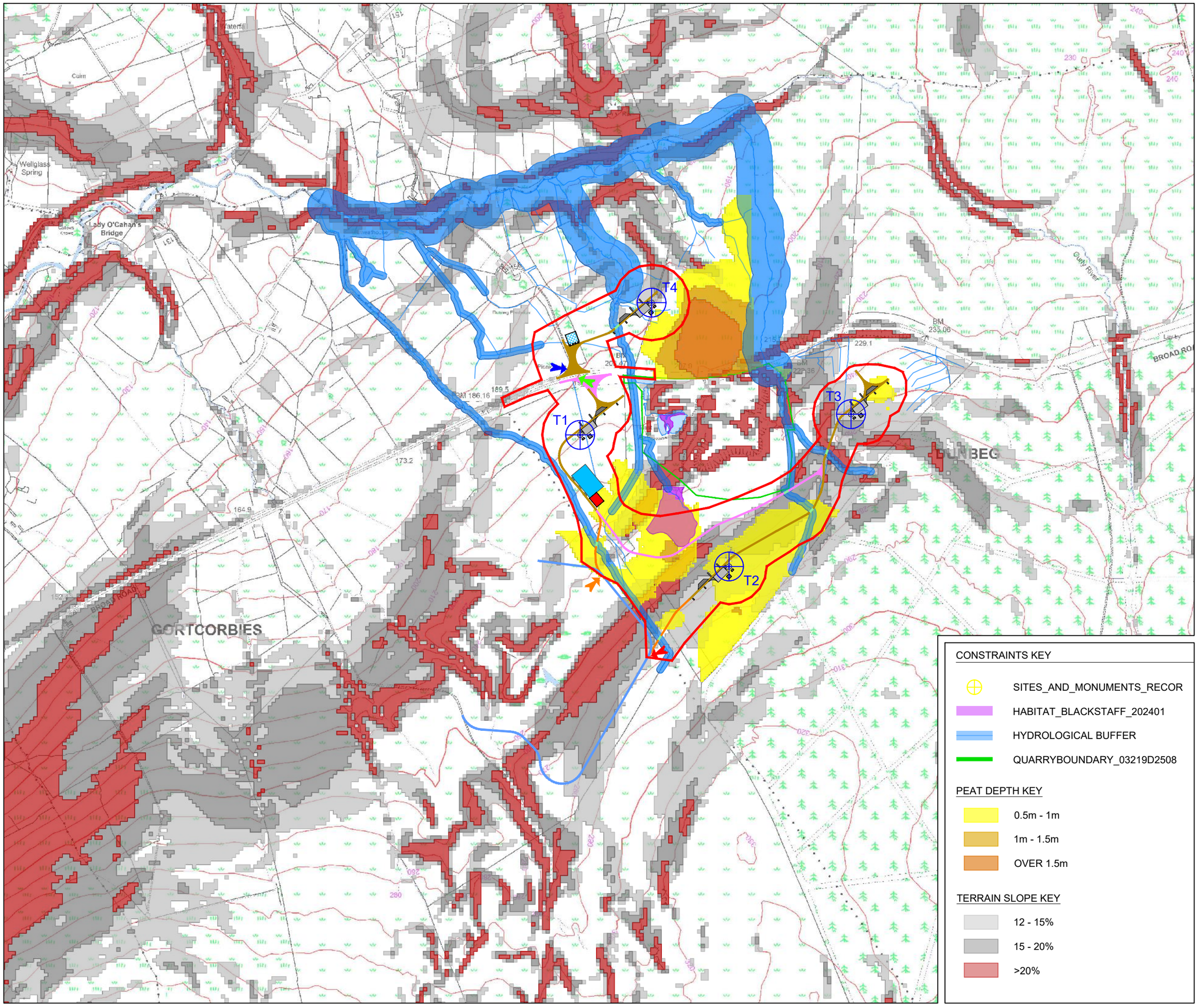

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KEY:

- SITE BOUNDARY
- WIND TURBINE
- PROPOSED SITE TRACK
- PROPOSED SITE TRACK (OPTION 1)
- PROPOSED SITE TRACK (OPTION 2)
- DUNBEG SOUTH TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
- SMALL CONSTRUCTION COMPOUND
- CONTROL BUILDING & SUBSTATION COMPOUND WITH HARDSTANDING AREA
- ENTRANCE TO SOUTHERN SECTION (OPTION 1a)
- ENTRANCE TO SOUTHERN SECTION (OPTION 1b)
- ENTRANCE TO NORTHERN SECTION
- ENTRANCE TO SOUTHERN SECTION (OPTION 2)

CONSTRAINTS KEY

- SITES_AND_MONUMENTS_RECOR
- HABITAT_BLACKSTAFF_202401
- HYDROLOGICAL BUFFER
- QUARRYBOUNDARY_03219D2508

PEAT DEPTH KEY

- 0.5m - 1m
- 1m - 1.5m
- OVER 1.5m

TERRAIN SLOPE KEY

- 12 - 15%
- 15 - 20%
- >20%

ISSUE	DRAWN	CHKD	APPD	DATE	REVISION NOTES
0	MC				First Issue

PURPOSE: OTHER	COORDINATES: TM65 IRISH GRID
SCALE: 1:10,000 @A3	DATUM: N/A
LAYOUT DRAWING: N/A	T-LAYOUT NO: PNIRcss028

PROJECT TITLE
DUNBEG SOUTH EXTENSION WIND FARM

DRAWING TITLE
COMBINED CONSTRAINTS & INFRASTRUCTURE LAYOUT

RES DRAWING NUMBER	REV
FIGURE 3	0

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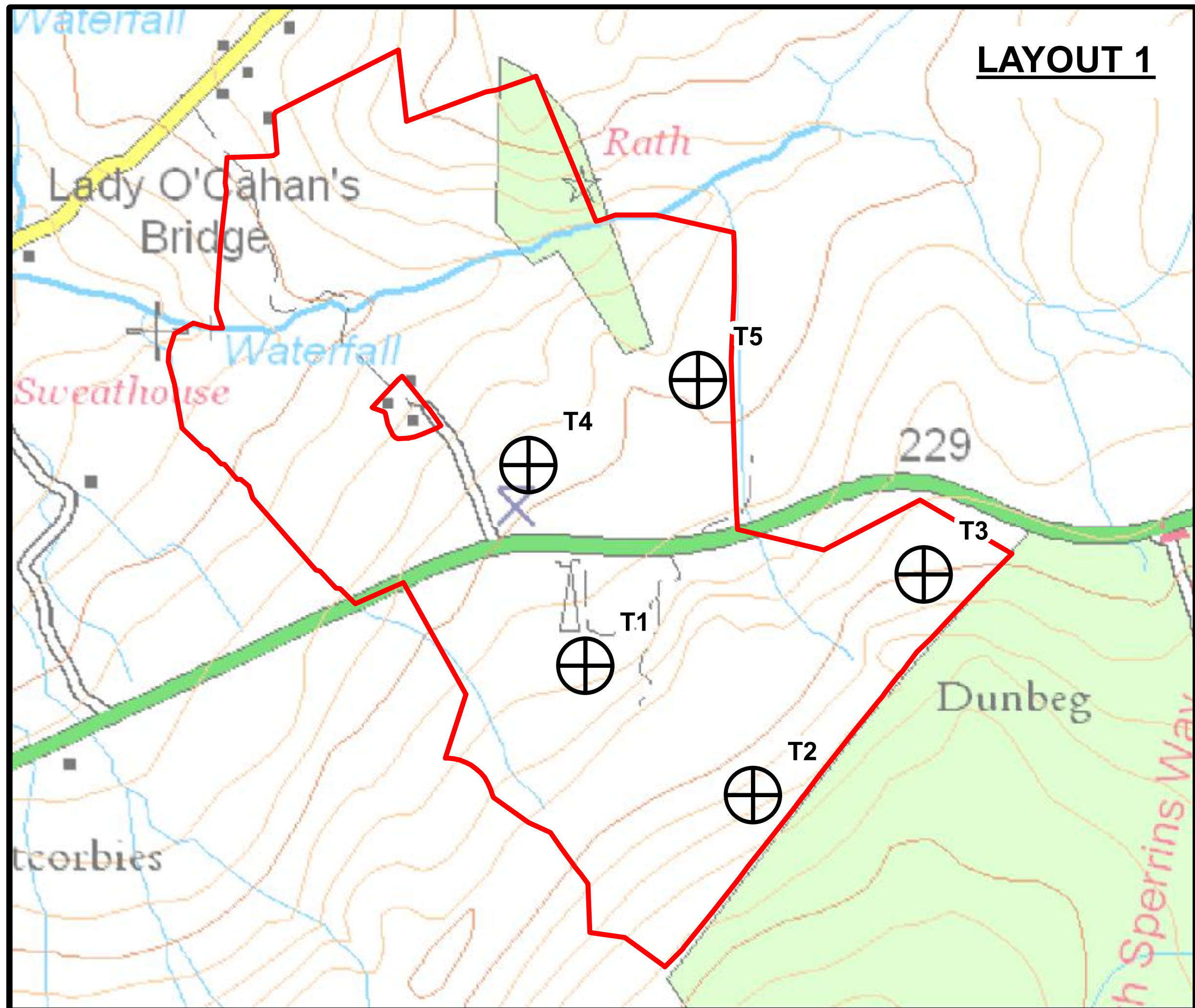

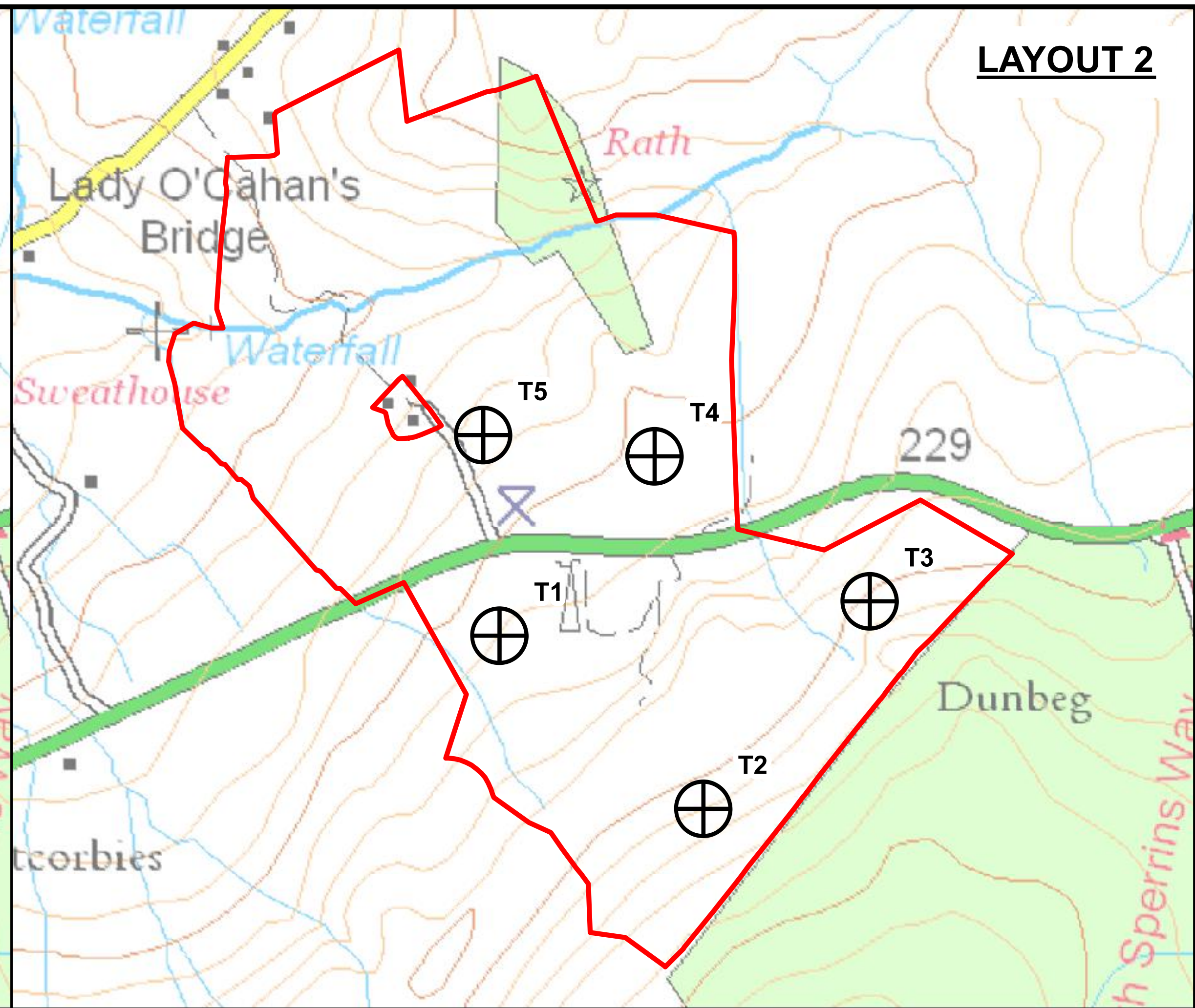

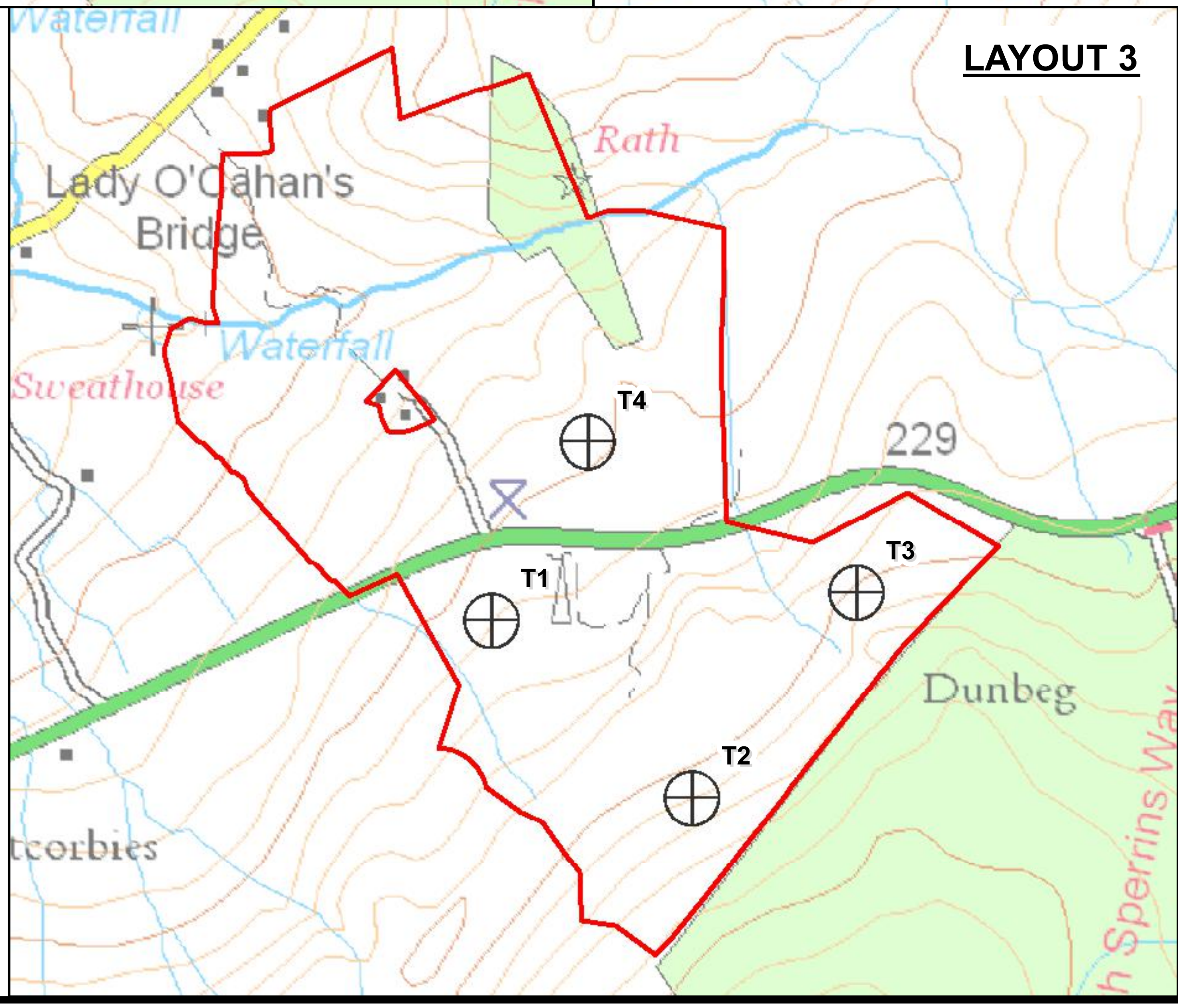

DUNBEG SOUTH EXTENSION

FIGURE 4

TURBINE LAYOUT EVOLUTION

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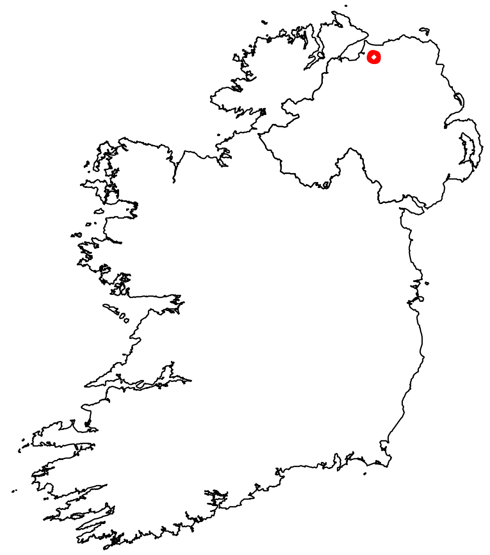
TURBINE LOCATIONS

SITE BOUNDARY



SITE LOCATION - NOT TO

LAYOUT DWG	T-LAYOUT NO.
N/A	Various

DRAWING NUMBER
05214-RES-LAY-DR-TE-007

SCALE - 1:15,000 @ A3

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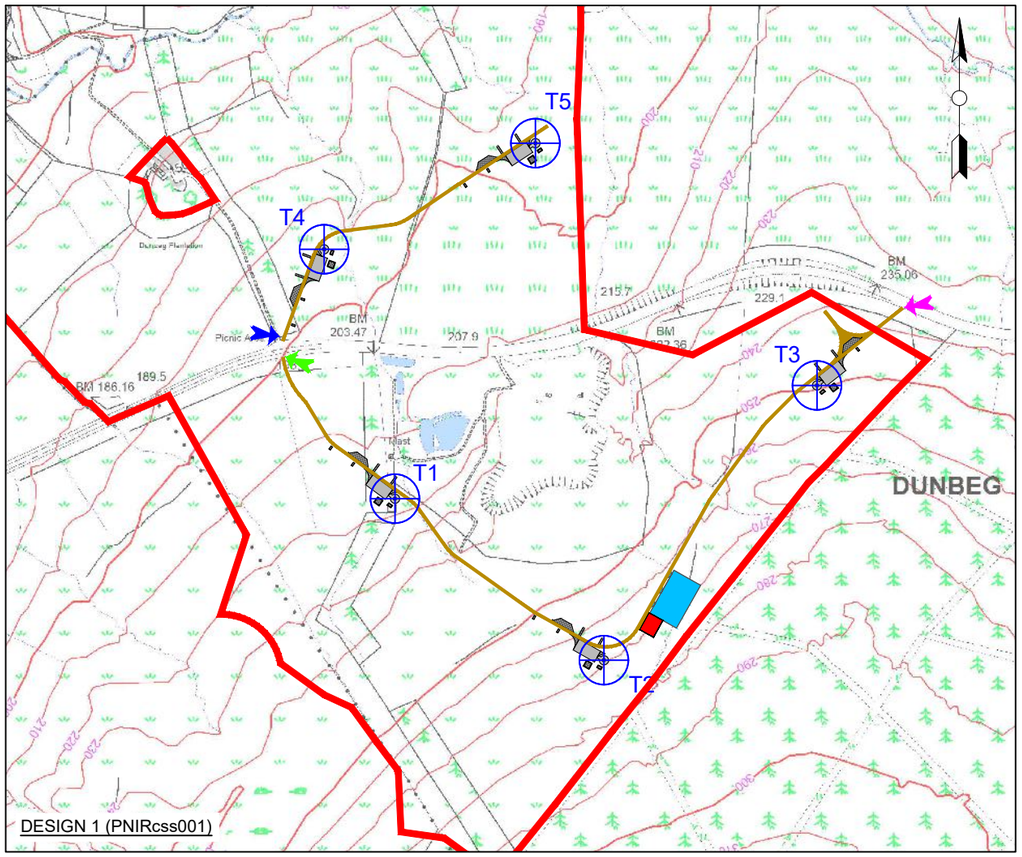

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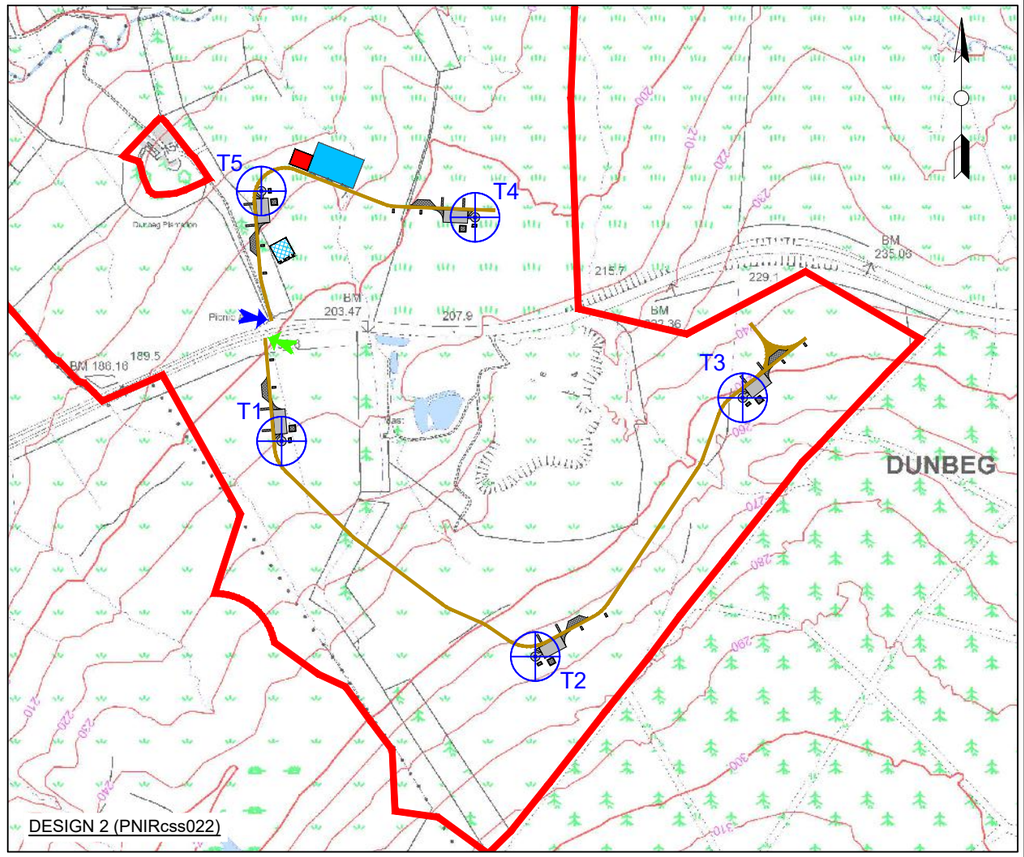
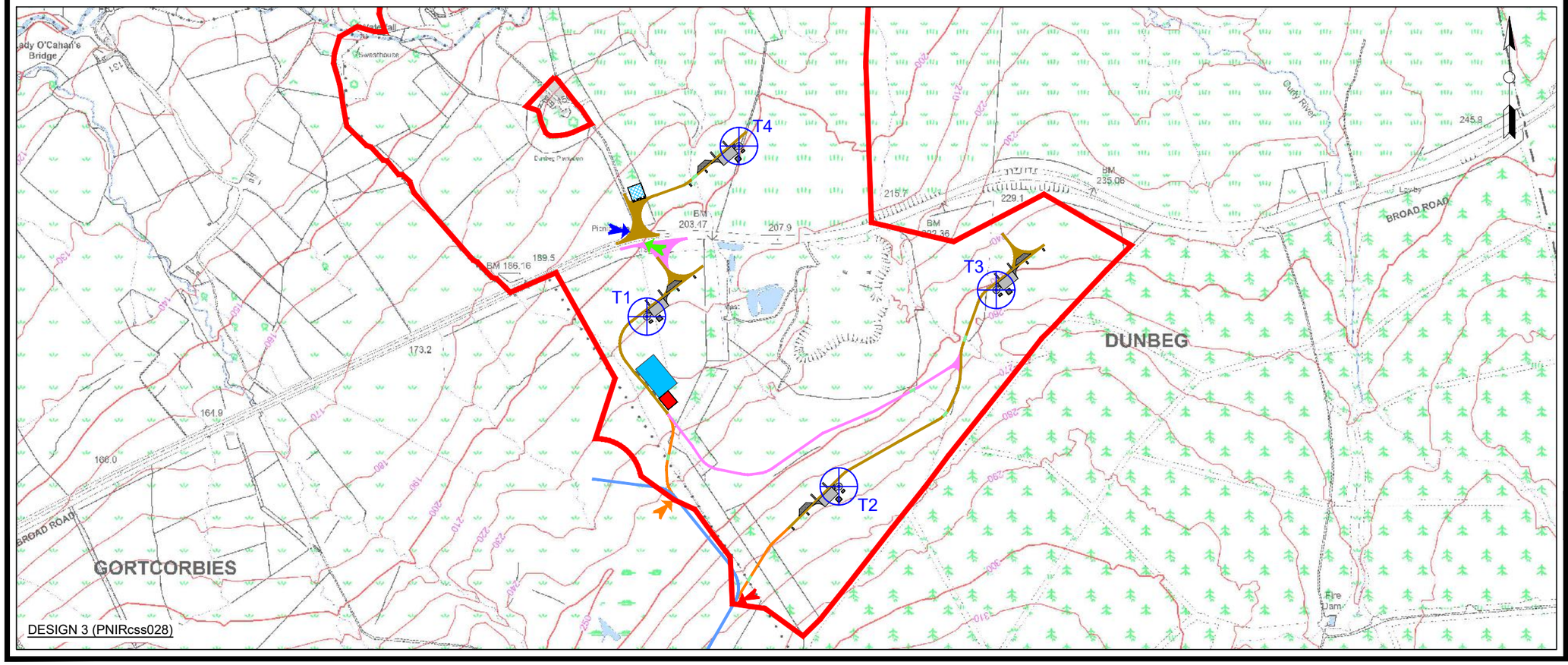


DESIGN 2 (PNIRcss022)



DESIGN 3 (PNIRcss028)

DUNBEG SOUTH EXTENSION WIND FARM

FIGURE 5

INFRASTRUCTURE EVOLUTION

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KEY:

- DEVELOPMENT AREA
- WIND TURBINE
- PROPOSED SITE TRACK
- PROPOSED SITE TRACK (OPTION 1)
- PROPOSED SITE TRACK (OPTION 2)
- DUNBEG SOUTH TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
- SMALL CONSTRUCTION COMPOUND
- CONTROL BUILDING & SUBSTATION COMPOUND WITH HARDSTANDING AREA
- ENTRANCE TO SOUTHERN SECTION (OPTION 1a)
- ENTRANCE TO SOUTHERN SECTION (OPTION 1b)
- ENTRANCE TO NORTHERN SECTION
- ENTRANCE TO SOUTHERN SECTION (OPTION 2)
- ENTRANCE TO SOUTH EAST SECTION

LAYOUT DWG: N/A	T-LAYOUT NO.: N/A
DRAWING NUMBER: 05214-RES-LAY-DR-PT-001	REV: 1
SCALE - 1:10,000 @ A3	

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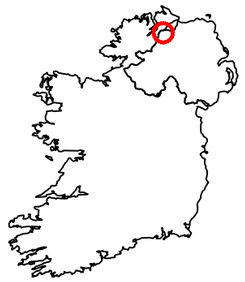
KEY:

- TURBINE DELIVERY ROUTE
- DELIVERY DIRECTION
- DUNBEG SOUTH (SITE)
- DUNBEG SOUTH EXTENSION (SITE)



SITE LOCATION - NOT TO SCALE

OVERVIEW
SHEET 1 OF 14

ISSUE	DRAWN	CHKD	APPD	DATE	REVISION NOTES
1	MC	DM	DM	2024-07-17	FIRST ISSUE

PURPOSE: PRELIMINARY	COORDINATES: OS NI
SCALE: 1:100,000 @A3	DATUM: N/A
LAYOUT DRAWING: N/A	T-LAYOUT NO: N/A

PROJECT TITLE
DUNBEG SOUTH EXTENSION WIND FARM

DRAWING TITLE
DELIVERY ANALYSIS V117

FIGURE 6 - DESIGN & ACCESS STATEMENT | REV 1

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DUNBEG SOUTH EXTENSION WIND FARM

FIGURE 7

HGV DELIVERY ACCESS ROUTE

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KEY:

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- DUNBEG SOUTH (SITE)
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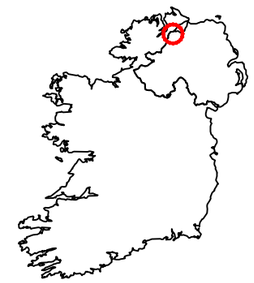

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DRAWING NUMBER: 05214-RES-ACC-DR-PE-006	REV: 0

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