Unshinaġh Wind Farm

Environmental Statement

Design and Access Statement

MANAGEMENT SYSTEM CERTIFICATION
ISO 9001 = ISO 14001 = OHSAS 18001
DNV

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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 Unshinagh Wind Farm, hereinafter referred to as the Development, located approximately 4 km south west of the village of Carnlough village Co. Antrim. Please see **Figure 1.1: Site Location.**

2. The Development comprises 14 three-bladed, horizontal axis wind turbines, each up to a maximum of 180 m to tip height, associated external electricity transformers; underground cabling; a newly created site entrance; access tracks; turning heads; crane hardstanding's; control building and substation compound, energy storage containers, tree felling, 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 hardstanding's; welfare facilities and temporary guyed meteorological masts. Works will also include the felling of trees to create access to the site for construction and facilitation of 3rd party access.

3. The proposed development is shown in **Figure 1.3: Infrastructure Layout.**

The Applicant

4. RES is the world's largest independent renewable energy company. At the forefront of the industry for nearly 40 years, RES has delivered more than 22GW of renewable energy projects across the globe and supports an operational asset portfolio exceeding 7.5GW worldwide for a large client base. RES is active in 10 countries working across onshore and offshore wind, solar, energy storage and transmission and distribution.

5. RES has developed 22 onshore wind farms in Northern Ireland totalling 246 MW and operates over 88.7 MW of wind capacity across Northern Ireland, has secured planning permission for a further 109.9 MW awaiting construction and has 80 MW in the planning system.

The Requirement for a Design & Access Statement

6. 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 m^2, to be accompanied by a Design and Access Statement. The Development is a Major Development application. In addition, the application site falls within the Antrim Glens (AONB) and compromises a wind farm substation compound containing a control building which result in the creation of circa 240m^2 of floor space.

7. 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.

8. 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

9. The Site is located in the townlands Drumourne, Unshinagh Mountain, Unshinagh South, Ticloy, Slane, Cregcattan (part of Galdanagh) and Aughareamlag, approximately approximately 4 km south west of the village of Carnlough village Co. Antrim. The site can be accessed via the Ballymena/Carnlough road. The location of the Development is shown in **Figure 1.1: Site Location**.

10. The Site is currently used for sheep and cattle grazing and predominantly comprises semi-improved agricultural land. The lands are well managed with extensive stoned farm tracks providing access to agricultural fields which are bounded by mature hedgerows and stone walls.

Planning Policy Context

PPS 1 – General Principles (March 1998)

11. 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)

12. 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

13. 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 Mid and East Antrim Borough Council 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)

14. Policy CTY1 states that non-residential development in the countryside 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.

15. 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

16. 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)

17. 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

18. The Site falls within the Mid & East Antrim Borough Council area and is located within the Antrim Coast and Glens AONB. The relevant local development plan is the Larne Area Plan (2010).

19. The plan 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

20. RES considers a range of potential factors when selecting a wind farm site. The following are key attributes that contribute to a viable site, which the application site possesses:

    - 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 Strategy

Design Principles

21. The design of the Development was 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.

22. The following design principles were applied:

    - The 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
    - The turbines must 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 turbines should be located in order to avoid and/or minimise potential effects on environmentally sensitive features (ecology, archaeology, hydrology etc.)
    - Landscape and visual design considerations should be taken into account
    - Mitigation by design should be the principle method of reducing potential environmental impacts
    - All site infrastructure should be designed as efficiently as possible to reduce the overall extent of development whilst maximising the renewable energy generation potential.

23. For the Development, the upland nature of the Site created a number of sensitivities that needed to be carefully addressed through appropriate design of the wind farm. The basis of the design process is the evaluation of the various constraints that were identified through the environmental surveying that was undertaken between 2019 and 2021, and consideration of landscape and visual effects. The following sections identify potential issues and outline how these have been addressed through appropriate design.

Key Considerations

24. Following consultation and baseline characterisation of the Site, the following key environmental issues were identified:
    - Landscape and visual
    - Archaeology and cultural heritage
    - Ecology
    - Ornithology
    - Fisheries
    - Geology and the water environment
    - Noise and shadow flicker
    - Traffic and transport.
25. The issues listed above were considered through the design with the aim of designing out significant effects. Where it was not possible to mitigate by design, the issues were considered further as part of the Environmental Impact Assessment (EIA), as detailed in the Environmental Statement (ES).
26. A key tool in this process was the combined constraints drawing **(Figure 3.3)** which was iteratively updated as new information from surveys, site visits and consultation was received. The following surveys informed the combined constraints drawing:
    - Breeding and wintering bird survey
    - Ornithological vantage point survey
    - National Vegetation Classification (NVC) Phase 2 survey
    - Terrestrial fauna surveys
    - Fisheries survey
    - Peat probing

- Hydrology assessment
- Archaeology and cultural heritage surveys
- Landscape field survey
- Transport and traffic reconnaissance trip
- Technical and engineering site walkovers.

27. In addition, a site walk over to review the turbine and infrastructure layout was held by RES, which was attended by the team of environmental, technical and engineering specialists to collaboratively review and develop the layout in response to the combined constraints, discuss interrelationships and mitigation, resolve potential conflicts and agree actions for further assessment. This ensured that interrelationships were thoroughly considered in the design of the layout.

Turbine Layout Evolution

28. There were four principle iterations of the turbine layout, these are shown in **Figure 3.1: Turbine Layout Evolution**, which were developed at the following key stages in the project process:

    - Initial Turbine Layout (Layout 1), when turbines were located based on preliminary constraints only and prior to baseline environmental surveys being completed;
    - Turbine Layout (Layout 2), when turbines were located based on preliminary constraints (prior to baseline environmental surveys being completed) and landowner area was increased to the south;
    - Primary Turbine Layout / EIA baseline data stage (Layout 3) when baseline surveys were complete and constraint information gathered.
    - Primary Turbine Layout / EIA baseline data stage (Layout 4) when baseline surveys were complete and constraint information gathered and final refinements were made to the layout.

Initial Turbine Layout (Feasibility Stage)

29. 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 at the time and in accordance with the design principles, prior to baseline surveys having been commenced. The layout was informed by the following constraints:

    - Preliminary watercourse buffers

- Slope
- Known private water supply locations
- Separation from housing (1000m) / Double the minimum separation distance of 500m.
- 198m buffer (tip height + 10%) to public roads), in accordance with the Best Practice Guidance to PPS 18.

30. This identified that the Site could potentially accommodate 13 turbines with a 136m rotor diameter.

31. This initial feasibility layout was reviewed by the Landscape Consultant (Layout 2). A layout comprising 16 turbines was initially assessed. ZTV diagrams were prepared to compare the difference in theoretical visibility for blade tip heights of 150 m versus 180 m and hub height visibility for three potential rotor diameter options (117 m, 126 m and 136 m). Comparative wirelines were prepared from six provisional viewpoint locations in key parts of the Study Area.

32. . The provisional wirelines showed no significant difference in the appearance of the turbines regardless of rotor diameter but 180 m blade tip was deemed to be the preferable tip height if 136 m rotor diameter is used (a larger rotor is able to capture more wind and is therefore more productive). This is because the taller hub creates more clearance/ visual separation between the blade tips and skyline and means that the blades are less likely to interfere with appreciation of the landscape.

33. A review of the initial 16-turbine layout based on wirelines of the six PVPs concluded that some refinements to turbine spacing/ groupings could be made to create a more uniform appearance that better reflected to underlying topography.

Primary Turbine Layout (EIA Baseline Stage)

34. Prior to detailed site assessments being undertaken by external consultants, RES technical analysts undertook site visits to check that there were no physical characteristics on site that may impact upon the turbine performance such as topography.

35. RES engineering and construction undertook site visits with ecological, ornithological and geology/hydrology consultants to review the turbine locations

and to agree principles for the design of the onsite infrastructure based on the constraints determined to date.

36. Following this 3 Turbines were added, and this necessitated other changes to maximise the efficiency of the turbines and to create a balanced layout.

37. The revised layout was informed by the original constraints with the following amendments:

    - Hydrological buffer 50 m;
    - Hydrological buffer 10 m;

38. The relocation of a number of the Turbines enabled some refinements to the layout.

    - Turbines were removed from the Curlew territories identified and an 800m buffer area was applied.
    - T14 was relocated to the centre of the site in order to reduce turbine numbers within the Antrim Hills SPA and reduces track required in areas identified as Blanket Bog.

The resulting 14 turbine layout with 136.0 m rotor diameter produced a more sympathetic layout as detailed below.

Combined Constraints

39. To ensure that all requirements were captured a combination of desktop and site-based surveys were undertaken to refine constraints. Detailed environmental and technical surveys were carried out to characterise the baseline environmental conditions on the Site and associated study areas, as described in more detail in Vol 2 Chapters 4 to 13 of this ES. Any constraints to development resulting from the baseline surveys were used to build up the combined constraints drawing.

Landscape & Visual

40. As mentioned above a Landscape Consultant was involved throughout the design process to provide advice regarding the scale of the Development and turbine heights and geometry.

41. At an early stage of the iterative design process the number of turbines was reduced from 16 to 14. Whilst this had little effect on the theoretical zone of visibility over the 30 km Study Area is has resulted in a number of benefits in landscape and visual terms, namely:

- The number of turbines has been reduced from 16 to 14;
- Turbines have been further set back from higher ground at the northern end of the site to reduce visibility from Carnlough;
- The turbines in the final layout that is presented in this ES are evenly spaced in relation to each other and to the site topography which has resulted in a simpler layout with fewer variations in tip heights in relation to contour AOD levels;
- Turbine 14 has been repositioned within the northern turbine grouping and appears as a coherent element rather than an outlier;
- There are fewer instances where 'stacking' of turbines occurs. Stacking is where two or more turbines will appear directly in front of each other in a view and will therefore result in a 'heavier' or more solid, and hence more prominent appearance.

42. Discussion with other members of the EIA project team was also carried out as part of the iterative design process. The archaeological consultant in particular has provided input into the selection of Provisional Viewpoints to ensure that cultural heritage sites are adequately represented. Chapters 4: Landscape & Visual and Chapter 5: Archaeology & Cultural Heritage of the ES provide detailed information with regards to these areas.

Archaeology

43. The proposed turbine locations, access road routes, construction activities and cable route have been placed to avoid all known archaeological heritage assets, and their immediate vicinity.

44. **Chapter 5: Archaeology & Cultural Heritage** of the ES considers in detail the impact of the Development on a number of assets, these include:

    - ANT 029:004 – Doonan Fort scheduled monument
    - ANT 029:031 – The Stone House scheduled monument
    - ANT 029:092 – Court Tomb scheduled monument
    - ANT 029:039 – Wedge Tomb scheduled monument

- HB06/01/020 – Lemnalary House, Grade B+
- HB06/01/055 – House near Ballymena Road, Grade B2
- Carnlough Conservation Area
- AN/121 – Cleggan Lodge Registered Park

Ecology

45. The site occupies the extensive southern slopes of the Garron Plateau, below a peak called Binnagee which rises to a height of 346 m at (IGR D26583 17070). The initial studies within the site "Blue Line," which encloses an area that is approximately 5.7 km in length and approximately 3.5 km in width (at its widest point).

46. The northern-most part of the site consists of a gently undulating upland plateau which descends into improved agricultural fields to the east in close proximity to the A42 Carnlough/Ballymena Road, and to swathes of semi-improved wet grasslands and coniferous forestry blocks to the south. The central part of the site lies on the fringes of an upland lake which supports a wide fringe of sedge fen, wet heath and mire habitats.

47. Sites designated at international, national and local level for their conservation value within a potential impact zone were considered. The nearest designated sites to the study area were identified, to assess the potential for remote effects of the scheme on valued habitats and species outside the immediate area.

Vegetation

48. The higher elevation areas in the northern-most part of the site are dominated by a complex mosaic of wet heath, mire, rush-pasture and acid grassland habitats which vary according to variations in peat depth, slope, aspect, local topography and a combination of both past and current grazing pressure. Grazing is mostly by sheep, although cattle were also observed on lower ground in the southern part of the site as well as smaller numbers in some of the northern-most, upland fields.

49. Grazing pressure differs markedly across the site according to vegetation type and elevation, with higher ground in the north and west of the site being subjected to relatively low intensity grazing whereas lower-lying areas consisting of Holcus

lanatus-dominated rush-pasture and acid grassland which are often heavily grazed with a tight sward and associated poor species diversity.

50. Grazing pressure is one of the main factors impacting negatively on the favourable condition of areas of NI Priority Habitat within the site, with a reversion from more typical upland heath and mire communities to grass-dominated communities in those areas subjected to the most sustained high levels of grazing pressure.

51. Sloping ground across the site, but particularly at mid-elevation and lower elevation parts of the site, often supports large expanses of marshy grassland consisting of species-poor rush-pastures where Juncus effusus, Molinia caerulea and/or Holcus lanatus can be present with occasionally more species-rich swards where Juncus acutiflorus is often the most dominant species. Wetland forbs present within such species-rich swards can include Jacobaea aquatica, Cirsium palustre, Ranunculus flammula, Galium palustre and Epilobium palustre. Such species-rich habitat falls within the description of the NI Priority Habitat Purple Moor-grass and Rush Pasture.

52. A series of four coniferous forestry blocks is present near the southern limit of the application area, each consisting of a monoculture of Sitka Spruce Picea sitchensis.

53. A JNCC Phase 1 Habitat Survey was conducted across the Site. This early study described the habitats within an area of approximately 618ha. While a more detailed NVC Habitat Survey was completed within a smaller Red Line, across an area of approximately 208.5 ha. The latter involved recorded detailed botanical information over 130 (2x2m) quadrats.

Terrestrial Fauna

54. Signs of mobile species were assessed to determine their point of origin. The study area was thus extended to take account of the potential for species to use the vicinity of the proposed development as part of wider territories or foraging areas. Watercourses within the site, and some tributaries outside the site, were surveyed for signs of otter. Specific study areas for each species are as follows;

    - Bats (450m around proposed turbine locations);
    - Otter, badger, (planning application boundary +100m buffer);
    - Red squirrel & pine marten (forestry plantations);

- Common lizard & smooth newt (site);
- Marsh fritillary Habitat (site);

55. Aside from detailed botanical and habitat surveys (as well as surveys for common lizard, smooth newt, pine marten, red squirrel, otter and badger) detailed bat surveys were also undertaken across the entire site, during the 2021 survey season. Overall, during 391 nights of monitoring; during 347-nights bat activity was either negligible or low. Moderate levels were experienced during 21-nights; 19-nights were high and 4-nights with near constant activity. Therefore, a BMMP (Bat Monitoring Mitigation Plan) has been recommended. Once implemented in full this will ensure that there is no significant impact to the local bat population. In addition, a detailed and significant HMP (Habitat Management Plan) has been agreed, the implementation of which will result in a 'Net Gain' in biodiversity terms as a result of the proposed windfarm.

Water Environment and Fisheries

56. The hydrology consultant recommended watercourse buffers of 50 m and 10 m depending on the catchment size of the watercourse, which were agreed as appropriate by the fisheries consultant.

Public Roads

57. 198 m 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.

Finalising Turbine Layout – EIA Baseline Stage – Final Layout

58. Using design principles agreed with environmental, engineering and technical disciplines, the infrastructure layout was developed and used to undertake baseline assessments.

59. During the course of the baseline surveys changes were made to the turbine layout the revised turbine layout is illustrated in Layout 4 – **Figure 3.1: Turbine Layout Evolution**.

- The configuration of substation, associated car parking and temporary construction compound / energy storage facility was refined;
- Minimization of land take by combining bell mouths at junctions / turning heads with areas of temporary crane hard standing to reduce the extent of infrastructure.

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

Vegetation

65. The engineering considerations minimised impact on sensitive habitats by utilising the existing track locations via upgrades where possible. This minimised the length of new track and where new access track is proposed, it is predominantly located in agricultural fields and coniferous shelterbelts of low ecological value.

Water Environment

66. The number of watercourse and drainage crossings has been minimised through the principle of avoidance at the layout design stage, and a number of culverts have been sited to coincide with existing culverts which will be upgraded. Proposals submitted in conjunction with this assessment indicate:
    - 6 crossings of a significant watercourse
    - 14 crossings of minor watercourses, the majority of which comprise existing track-side drains.

67. The location and nature of watercourse crossings were reviewed with the hydrology and fisheries consultants as detailed in **Chapter 8: Fisheries and Chapter 9: Geology & Water Environment.**

Site Entrance Location

68. The site entrance is located to the north of the Slane road/Ballymena road junction see ES Vol 3 Figure 1.10. As specified in DCAN 15, visibility splays measuring 160m x 4.5m are provided in both directions.

69. Following construction, the site entrance will be reinstated to reduce the extent of hardstanding back to its original pre-construction state see ES Vol 3 Figure 1.10.

Control Building and Substation

70. The buildings will located to the central part of the site along which is to the lower slope of the site and is set back from the public road. Visibility will be limited from out with the site. The building will be orientated to be accessed from the south.

71. The buildings will be traditional in nature with rendered walls and tiled roofs, common characteristics of many rural buildings. The appearance of the buildings has been selected to reflect the rural character of the area to maximise the integration of the buildings within the wider landscape.

Temporary Construction Compound / Energy Storage

72. The temporary construction compound is required to be located close to the main bulk of the construction works and the energy storage facility is co-located adjacent to the Control Building and Substation.

73. Energy storage containers will utilise the southern portion of the temporary construction compound on a permanent basis with the remainder of the temporary construction compound being removed and returned to farmland.

Final Infrastructure Layout

74. The final infrastructure layout is shown in Design 2 of **Figure 3.2: Infrastructure Design Evolution.** Once finalised, the Planning Application Boundary was redrawn, ensuring sufficient space within the boundary for all features including SUDS.

75. The final infrastructure layout and combined constraints is shown in **Figure 3.3: Combined Constraints & Infrastructure**.

Access Statement

76. 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**, the assessment has been prepared in line with Policy AMP 6 of PPS3.

77. 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)
    - Larne Area Plan 2010

78. A summary of consultation responses and proposed mitigation measures are included in **ES Volume 2, Chapter 11: Traffic & Transport**.

Site Entrance

79. The site entrance is located north of the Slane road/Ballymena road junction on the A42 Ballymena/Carnlough Road. At present the site entrance is marked by mature trees which will require removal in part. The site entrance is located along the A42 Carnlough/Ballymena road, this route is not identified as a protected route in the current Larne Area Plan 2010 and as such complies with policy TR2 of this Plan. The site entrance has been designed in accordance with Policy AMP2 of PPS 3.

80. The proposed site entrance will provide suitable access, as specified in DCAN 15, visibility splays measuring 160m x 4.5m are provided in both directions.

81. Following construction, the site entrance will be reinstated to reduce the extent of hardstanding back to its original pre-construction state.

Site tracks

82. Within the site, access to the wind turbines and other infrastructure from the site entrance will be provided by approximately 12.53 km of site tracks. To minimise the impact of the proposed site infrastructure, existing site tracks have been utilised where practical for access to the turbine locations. 0.46 km of existing site tracks will be upgraded in combination with 12.07 km of new access tracks.

Delivery Routes

83. Specialist vehicles are required to transport components to the site. One vehicle would transport turbine blades, while another type would transport the tower sections. Swept path analyses have been undertaken for blade delivery as this is the more onerous scenario, to determine the works required to allow passage through pinch-points on the route as illustrated in **ES Vol 4 Appendix 11.1**

84. The proposed access route for AILs from Belfast Port has been used previously for the construction of various wind farms that have utilised the A8. From Belfast the route will travel north on the M2, onto the A26 at Dunsilly Roundabout, continuing for c. 15.7km. The route exits onto the A42, Raceview Road, continuing on the A42 east c. 19.7km to the site entrance.

85. 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.

86. Where required, approval to temporarily remove street furniture (for the minimum period as is reasonably practical), will be obtained from the appropriate bodies prior to deliveries post planning consent.

87. The abnormal load route and the HGV routes have been assessed as acceptable in the ES **see Vol 2 Chapter 11 Transport and Traffic**, this assessment has taken into account policy TR3 of the Larne Area Plan 2010. 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.

Car Parking

88. A temporary Construction compound will be present throughout the duration of the enabling and construction works providing adequate car parking for all onsite staff, this is in accordance with Policy TR5 of the Larne Area Plan 2010. Staff numbers during the Operational phase will be limited due to minimal on-site staff requirements however car parking provision will be accommodated within the site.

Disability access

89. Disabled access to the buildings within the Development will be provided via ramps and suitable parking will be provided, consideration has been given to Policy AMP1 of PPS 3.

Sustainability

90. 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.

91. 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.

92. 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:

    - An Outline Habitat Management Plan has been prepared to restore and enhance blanket bog and heathland habitats on site (ES Volume 4 Technical Appendix 6.6)
    - 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 9.1).
    - An Outline Construction Environmental Management Plan (oCEMP) (Contained within ES Volume 4 Technical Appendix 6.7) is included within the Environmental Statement and a Construction and Decommissioning Method Statement (CDMS) will be prepared if planning consent is granted. The CEMP and CDMS would be agreed with the DFI Planning and would describe 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.

93. The Development is a 58.8MW wind farm consisting of 14 x 4.2MW turbines. The amount of electricity that could be produced by the Development is estimated at 236.9gWh per year which is enough electricity to meet the needs of 62,800 homes

each year1, over 6,000 more than the current housing stock (of approximately 56,5002) in the local area.

94. A socioeconomic assessment of the Development is estimated to involve a capital spend of £61.71 million. Of this total, £24.70 million (nominal prices) will be realised within the Northern Ireland economy. The projected 12-month construction phase is estimated to create or sustain 139-243 total (direct, indirect and induced) job years of employment, £3.37-£5.96 million (2018 prices) of wages and £7.56-£13.04 million (2018 prices) of GVA to the Northern Ireland economy.

95. The estimated total (direct, indirect and induced) benefits realised in Northern Ireland by the operational phase of the proposed Development includes wages of £3.2 million (2018 prices) and £12.3 million (2018 prices) in GVA over the 35-year operating period.

96. For further details see **ES Volume 2 (Main Report) Chapter 13: Socioeconomics.**

97. 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.

98. 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 (over six months prior to the submission of the planning application) to facilitate a constructive consultation process. 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 environmental assessment process.

99. Through the consultation process, we have taken the opportunity to engage with interested parties to facilitate public understanding of the potential impacts and

[1] For the Development we have assumed a load factor of 0.46, which was provided previously by RES, and applied to Oxford Economics' calculations. This load factor allows us to account for wake and electrical losses using typical wind speeds/directions etc. to give a realistic prediction of electricity output (rather than using a theoretical maximum level whereby it is assumed that wind blows for 24 hours a day 365 days a year on every wind farm site.)

[2] Oxford Economics Internal Model Suite.

benefits of the Development. A Pre-Application Community Consultation (PACC) Report has been submitted with the planning application.

Conclusion

100. 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.

101. 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.

102. 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.

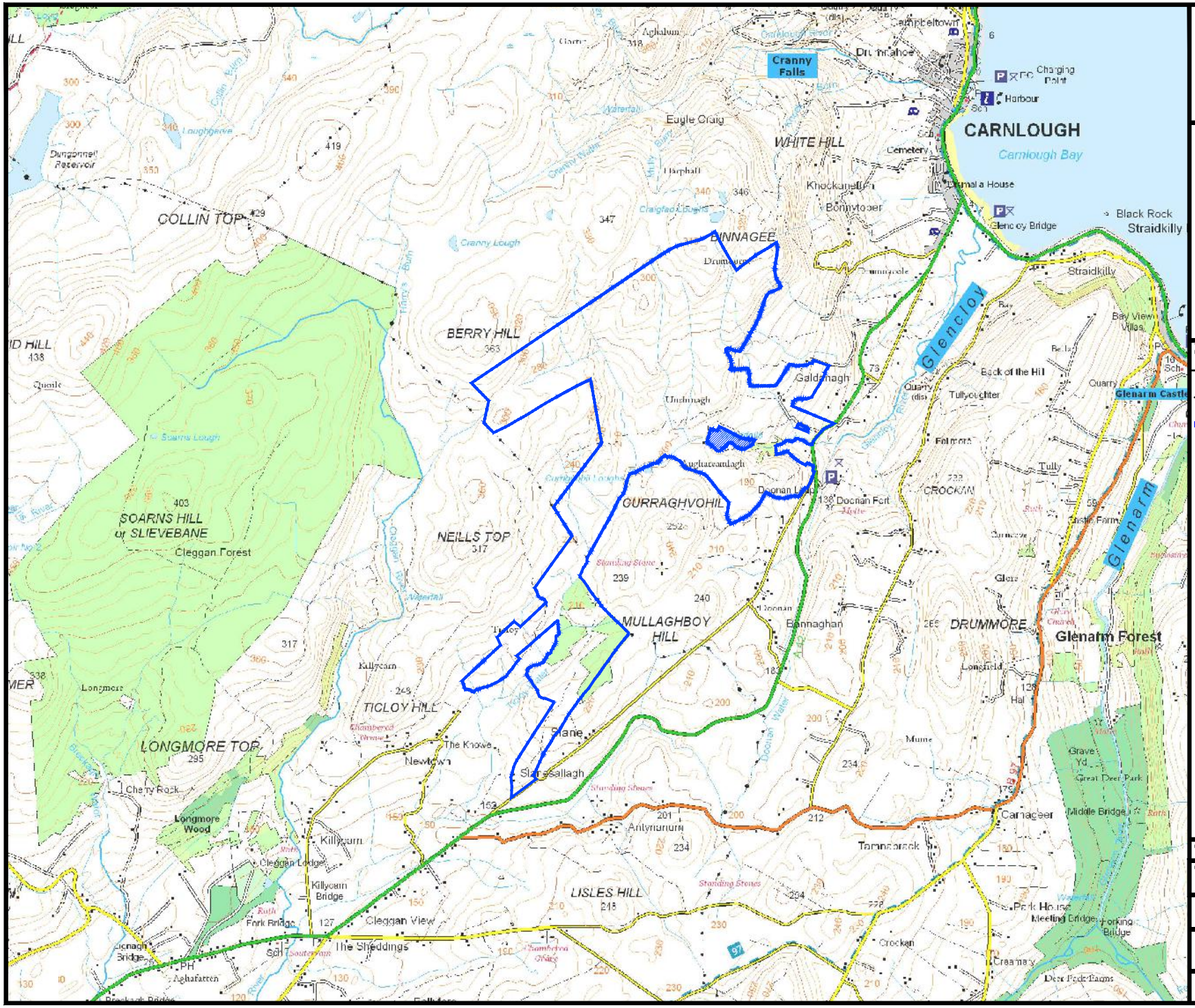
103. The resulting Development layout includes the following features:

- A simple layout with few variations in tip heights in relation to contour AOD levels;
- 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



UNSHINAGH WIND FARM

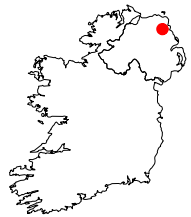
FIGURE 1.1

SITE LOCATION PLAN

KEY

SITE LOCATION

LAND NOT INCLUDED



SITE LOCATION - NOT TO SCALE

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

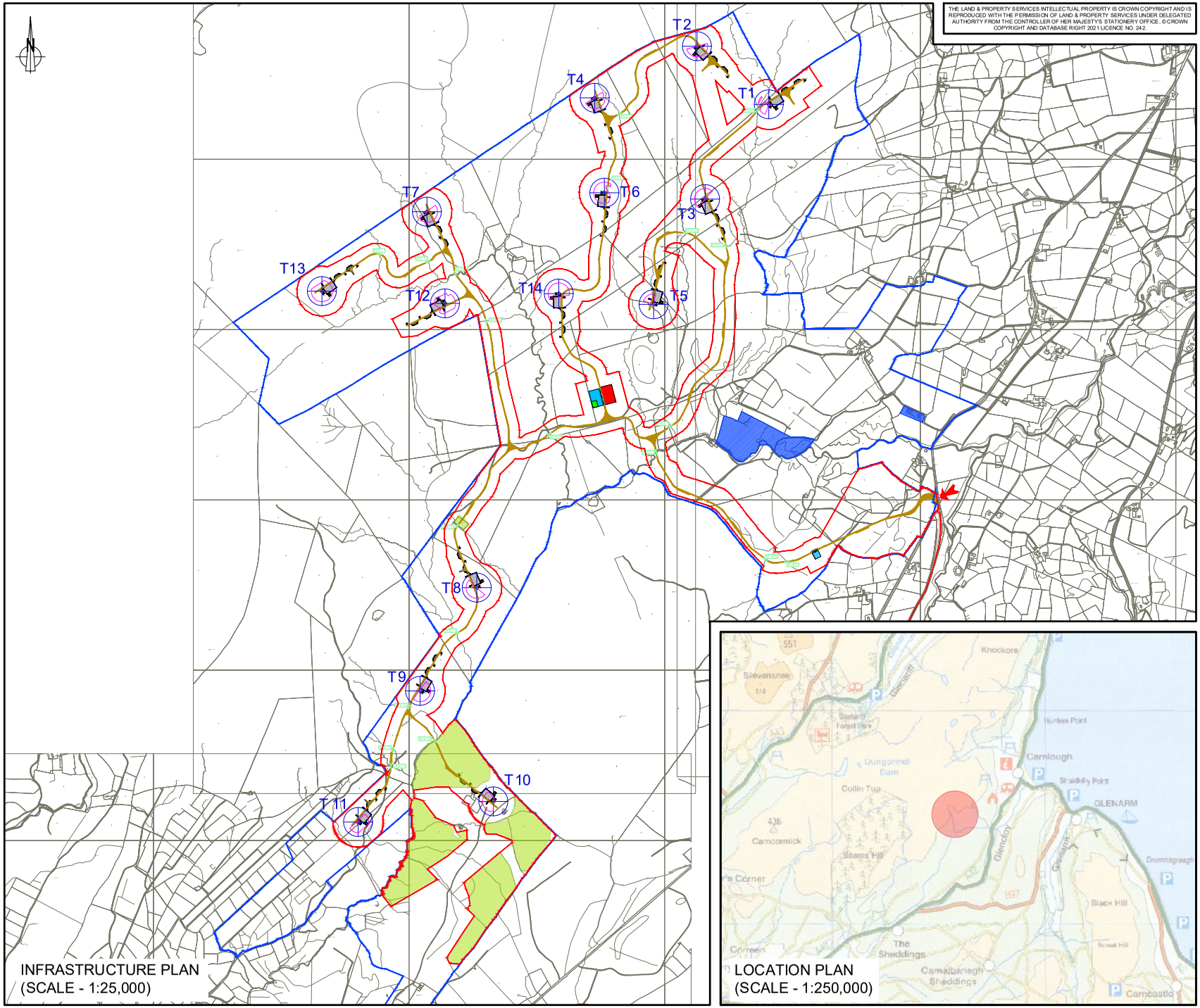
DRAWING NUMBER

04291-RES-LAY-DR-LE-016

SCALE - 1:50,000 @ A4

NON-TECHNICAL SUMMARY

Infrastructure Layout



UNSHINAGH WIND FARM

FIGURE 1.3

INFRASTRUCTURE LAYOUT

KEY

- PLANNING APPLICATION BOUNDARY
- LAND UNDER APPLICANTS CONTROL
- LAND NOT INCLUDED
- WIND TURBINE LOCATION
- TURBINE MICROSITING
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
  - ENERGY STORAGE COMPOUND
- TEMPORARY ENABLING WORKS COMPOUND
- WATERLESS WHEEL WASH
- CONTROL BUILDING & SUBSTATION COMPOUND WITH PERMANENT HARDSTANDING AREA
- SITE ENTRANCE LOCATION
- FORESTRY TO BE REMOVED

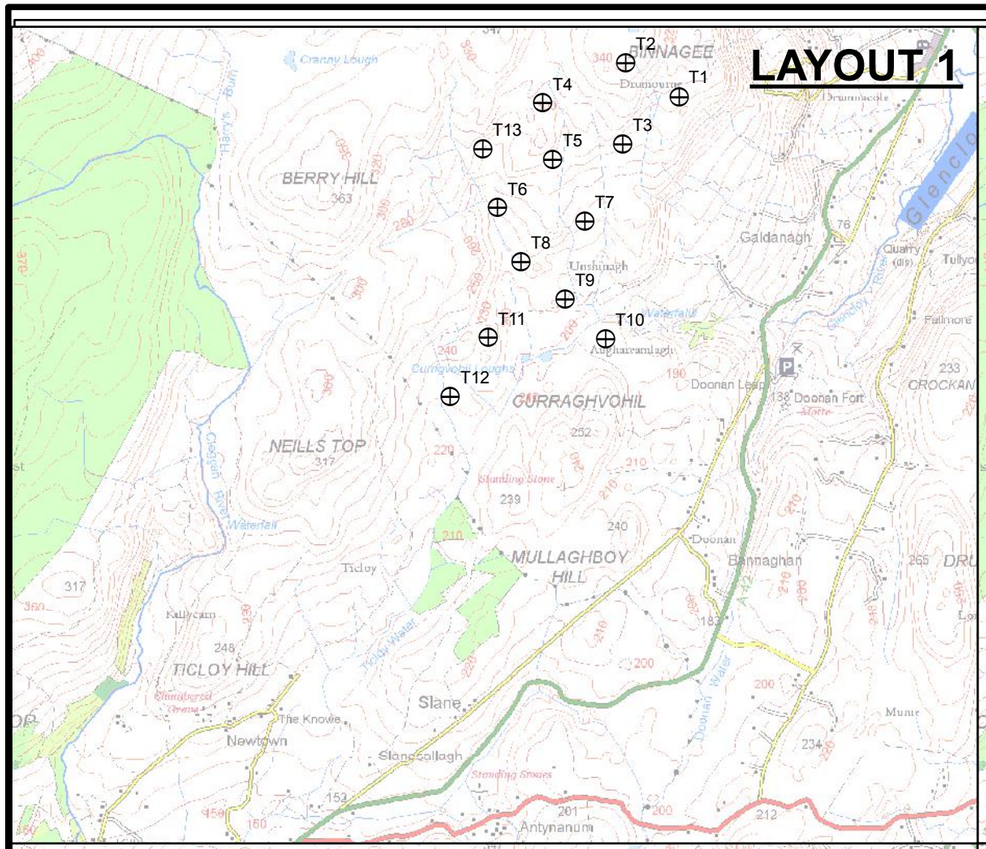
LAYOUT DWG	T-LAYOUT NO.
N/A	PNIRuns024

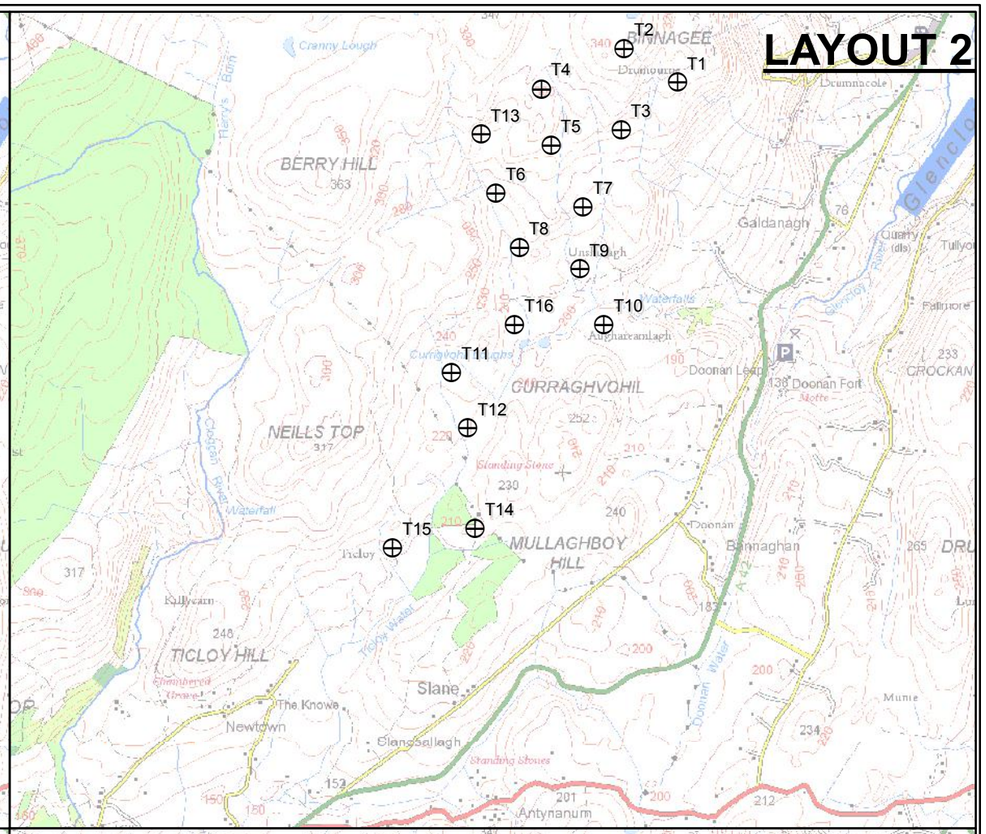
DRAWING NUMBER
04291-RES-LAY-DR-PE-001

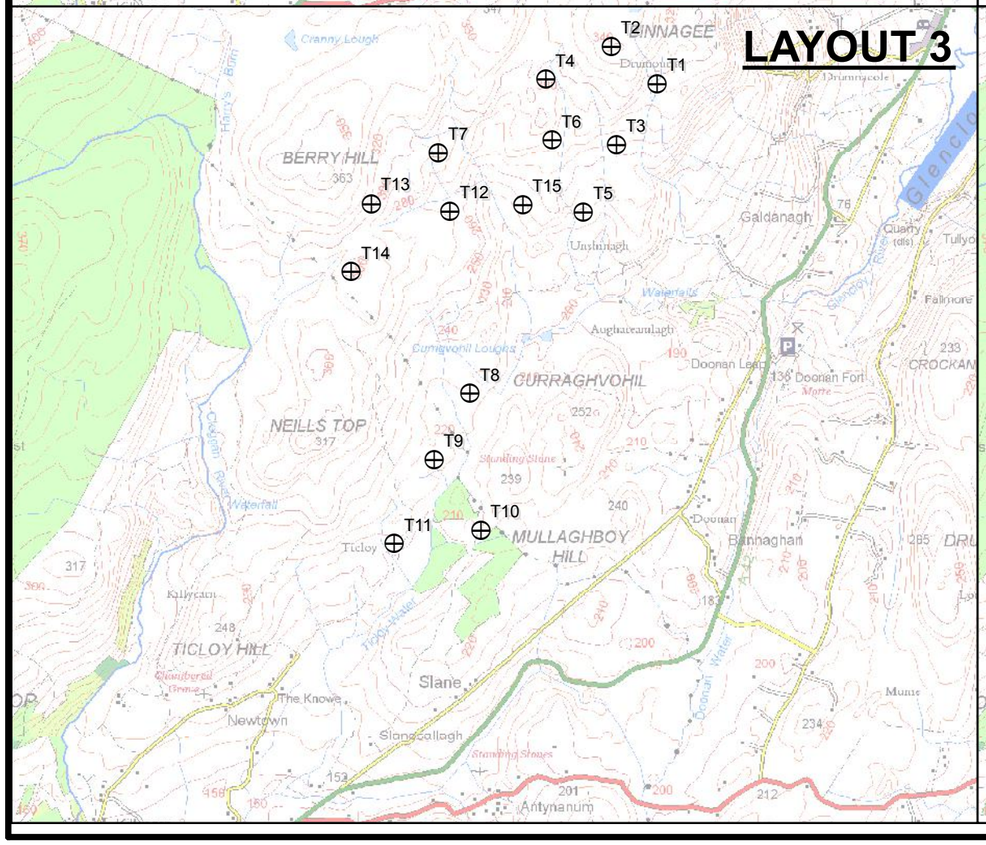
SCALE - AS SHOWN @ A4

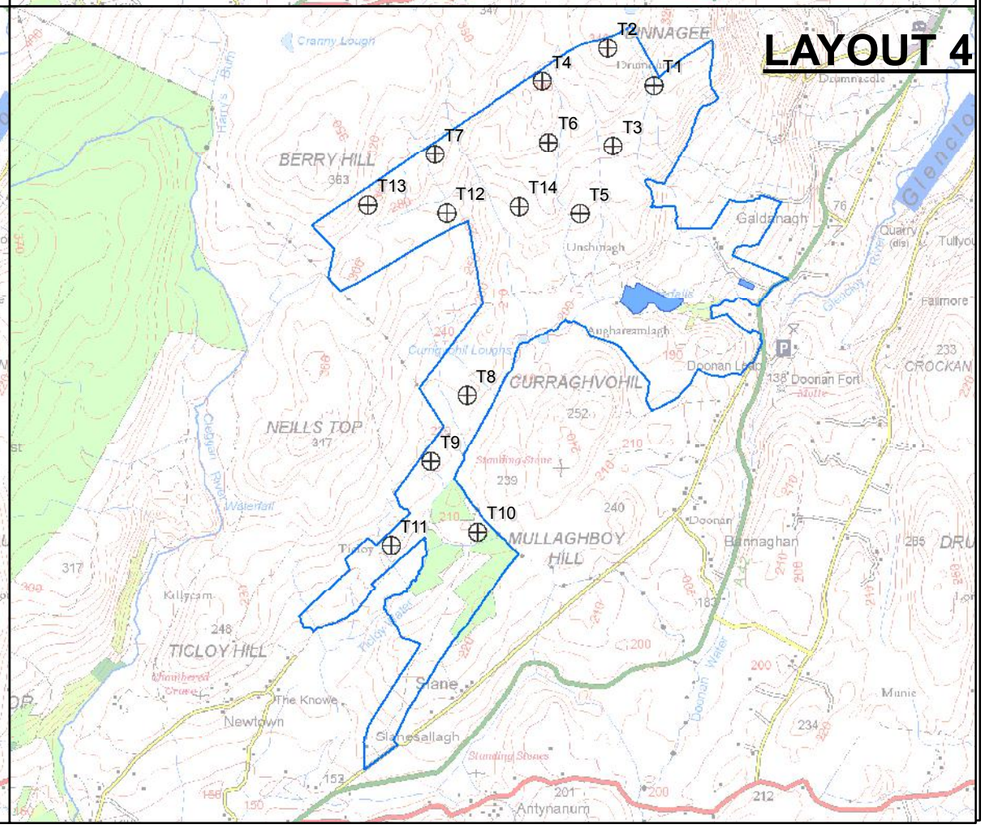
ENVIRONMENTAL STATEMENT 2021

Turbine Layout Evolution









UNSHINAGH

FIGURE 3.1

TURBINE LAYOUT EVOLUTION

⊕ Turbines

Land Under Applicant's Control

Exclusion Zones

Layout 1 - PNIRuns003
13 turbines x 136 m rotor diameter

Layout 2 - PNIRuns007
16 turbines x 136 m rotor diameter

Layout 3 - PNIRuns023
15 turbines x 136 m rotor diameter

Layout 4 - PNIRuns024
14 turbines x 136 m rotor diameter

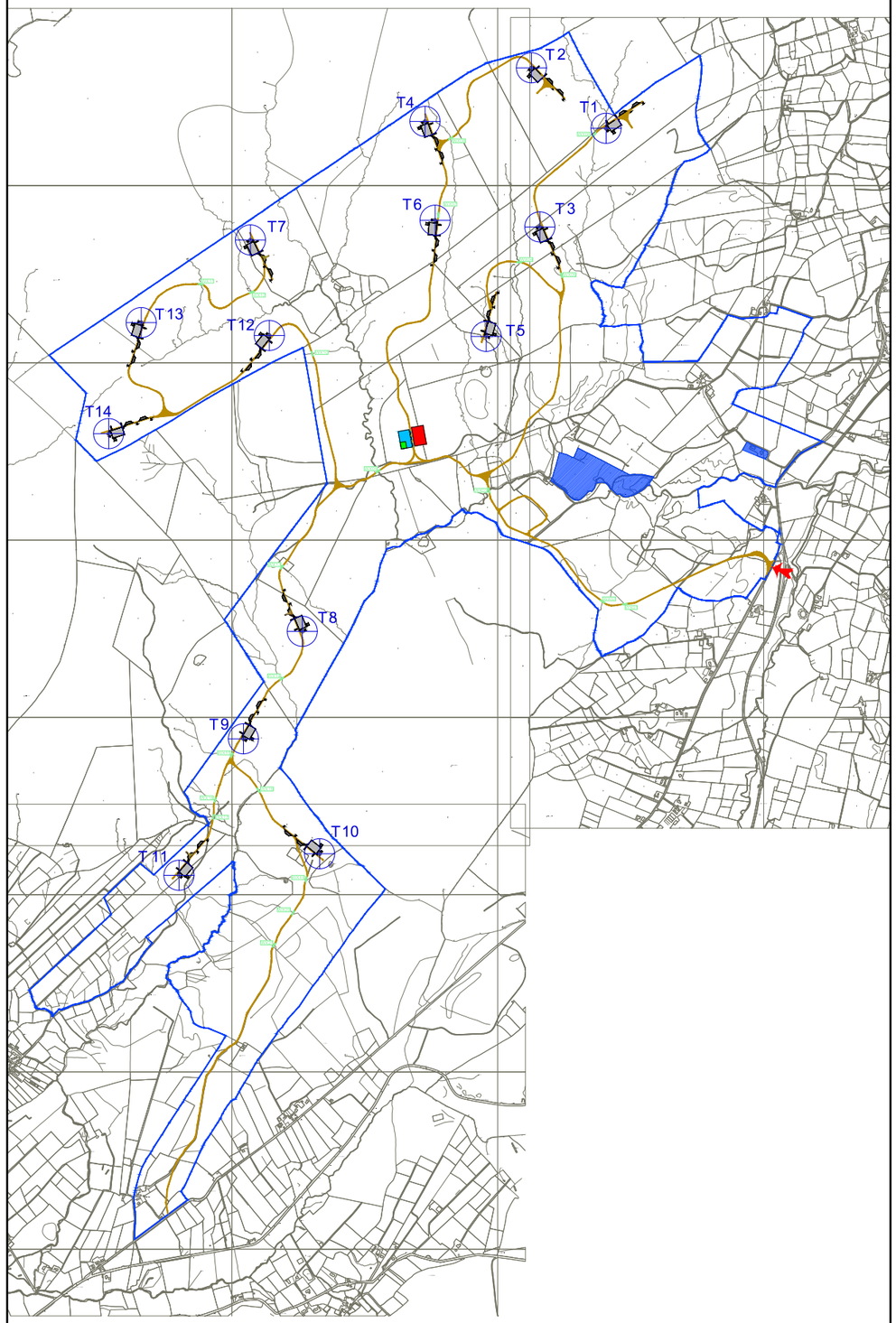
LAYOUT DWG	T-LAYOUT NO.
N/A	N/A

DRAWING NUMBER
04291-RES-LAY-DR-TE-011

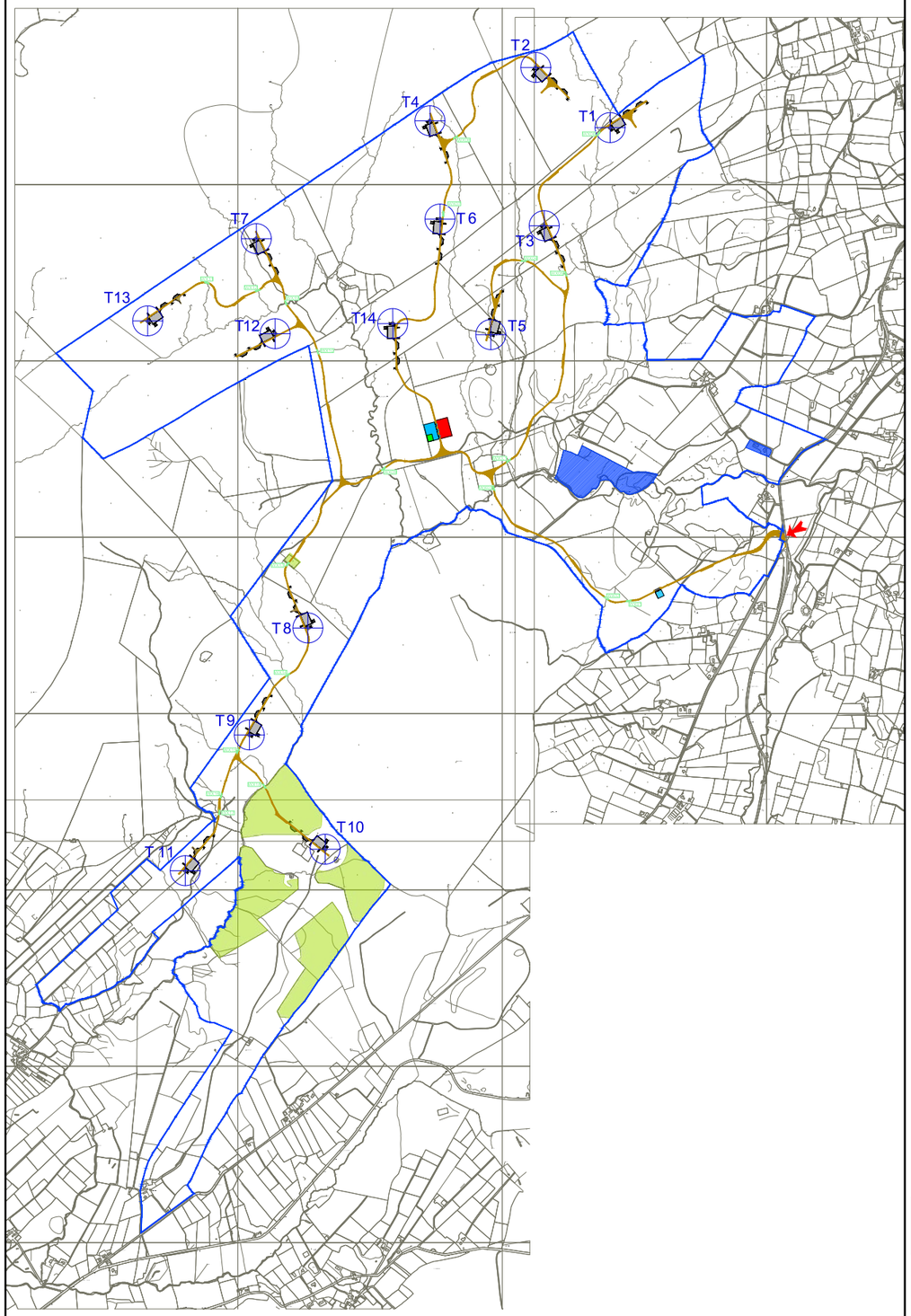
SCALE - 1:45,000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2021

Infrastructure Layout Evolution



DESIGN 1: 04291-RES-LAY-DR-PE-002 (REV 2)
(PNIRuns014)



DESIGN 2: 04291-RES-LAY-DR-PE-002 (REV 3)
(PNIRuns024)

UNSHINAGH WIND FARM

FIGURE 3.2

INFRASTRUCTURE DESIGN EVOLUTION

KEY

- LAND UNDER APPLICANTS CONTROL
- LAND NOT INCLUDED
- WIND TURBINE LOCATION
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
  - ENERGY STORAGE COMPOUND
- TEMPORARY ENABLING WORKS COMPOUND
- WATERLESS WHEEL WASH
- CONTROL BUILDING & SUBSTATION COMPOUND WITH PERMANENT HARDSTANDING AREA
- SITE ENTRANCE LOCATION
- FORESTRY TO BE REMOVED

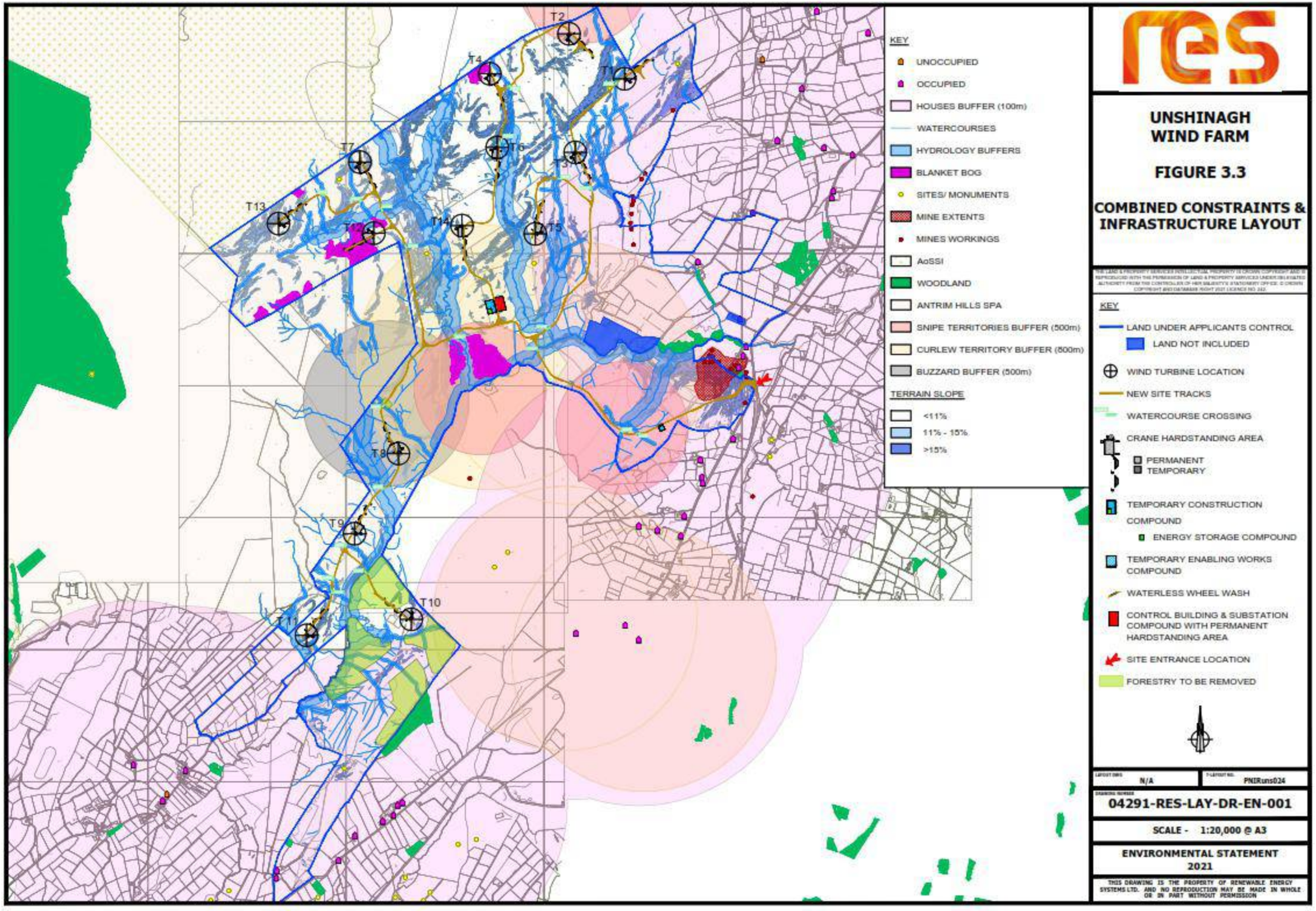
LAYOUT DWG	T-LAYOUT NO.
N/A	AS SHOWN

DRAWING NUMBER
04291-RES-LAY-DR-PE-002

SCALE - 1:25,000 @ A3

ENVIRONMENTAL STATEMENT 2021

Combined Constraints and Infrastructure



res

UNSHINAGH WIND FARM

FIGURE 3.3

COMBINED CONSTRAINTS & INFRASTRUCTURE LAYOUT

KEY

- LAND UNDER APPLICANTS CONTROL
- LAND NOT INCLUDED
- WIND TURBINE LOCATION
- NEW SITE TRACKS
- WATERCOURSE CROSSING
- CRANE HARDSTANDING AREA
  - PERMANENT
  - TEMPORARY
- TEMPORARY CONSTRUCTION COMPOUND
  - ENERGY STORAGE COMPOUND
- TEMPORARY ENABLING WORKS COMPOUND
- WATERLESS WHEEL WASH
- CONTROL BUILDING & SUBSTATION COMPOUND WITH PERMANENT HARDSTANDING AREA
- SITE ENTRANCE LOCATION
- FORESTRY TO BE REMOVED

LAYOUT DWG	N/A	P-LAYOUT NO.	PNIRuns024

DRAWING NUMBER: 04291-RES-LAY-DR-EN-001

SCALE - 1:20,000 @ A3

ENVIRONMENTAL STATEMENT 2021

Turbine Delivery & HGV Route

UNSHINAGH WIND FARM

DESIGN AND ACCESS ASSESSMENT

HGV ROUTE

KEY

- HGV DELIVERY ROUTE
- PROPOSED SITE ENTRANCE

NOTE

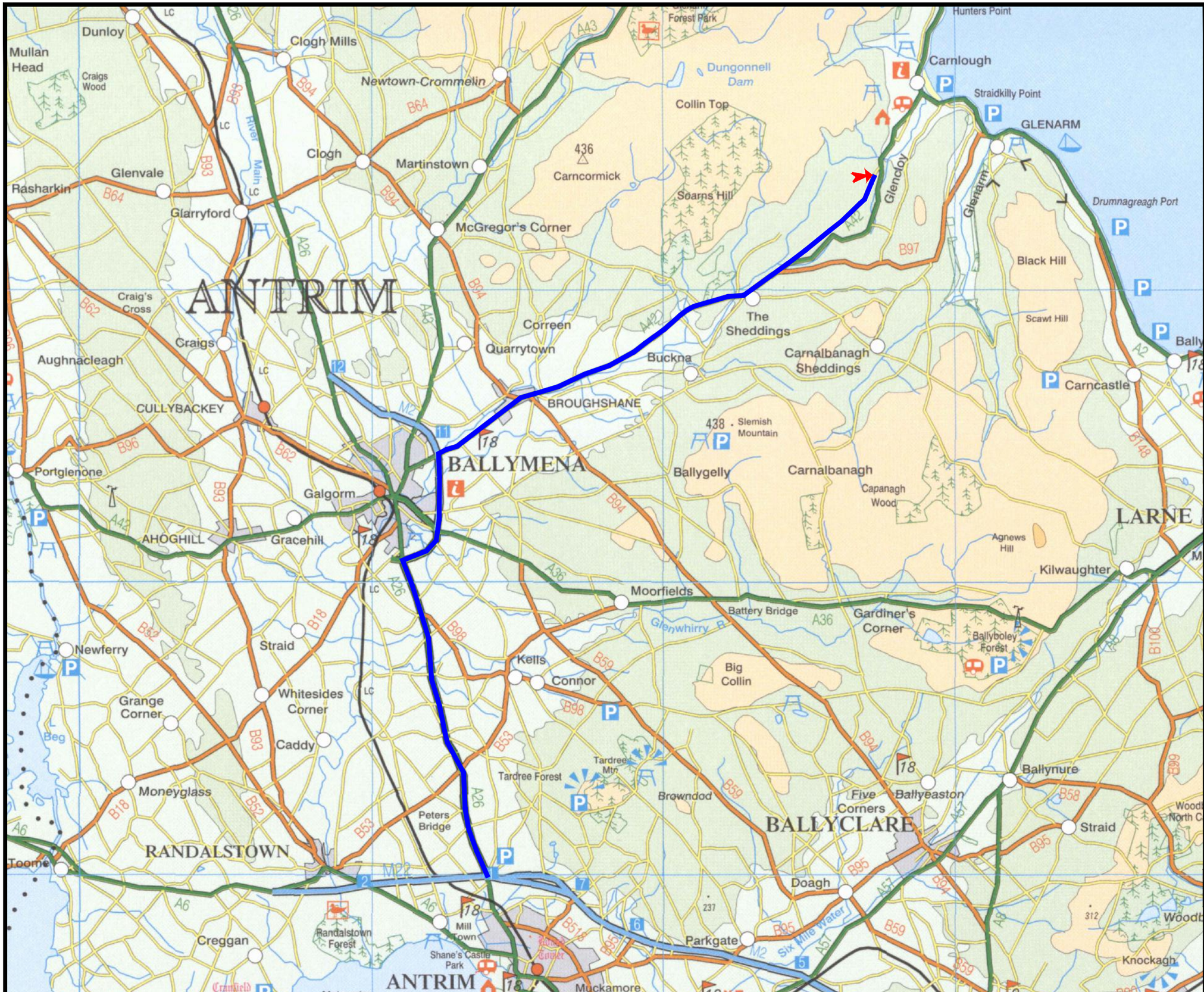
1. ROUTES ARE INDICATIVE AND WILL BE CONFIRMED PRIOR TO CONSTRUCTION.

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

DRAWING NUMBER
04291-RES-ACC-DR-LO-006

SCALE - 100,000 @ A3

EIA REPORT & PLANNING APPLICATION 2021



res

UNSHINAGH WIND FARM

FIGURE 12.1

TURBINE DELIVERY ROUTE

KEY

- TURBINE DELIVERY ROUTE
- PROPOSED SITE ENTRANCE

NOTE

1. PORT OF DELIVERY WILL BE CONFIRMED AHEAD OF CONSTRUCTION DESIGN, AND WILL BE APPLIED TO ANY AIL ROUTE PERMIT APPLICATION. AT THIS STAGE, IT'S ANTICIPATED THE PORT OF DELIVERY FOR TURBINE COMPONENTS WILL BE EITHER BELFAST OR LISAHALLEY PORTS.

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

DRAWING NUMBER
04291-RES-ACC-DR-LO-007

SCALE - 125,000 @ A3

EIA REPORT & PLANNING APPLICATION 2021