Blair Hill Wind Farm

Design & Access Statement

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1 Introduction

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1.1 Background

1.1.1 Renewable Energy Systems (RES) Ltd. (hereafter referred to as 'the Applicant') is applying to the Scottish Ministers for Section 36 (S36) consent under the terms of the Electricity Act 1989 and deemed planning permission under the terms of the Town and Country Planning (Scotland) Act 1997, to construct and operate Blair Hill Wind Farm (hereafter referred to as the 'Proposed Development'), at site centre British National Grid (BNG) 241912, 572186.

1.2 Purpose of this Document

1.2.1 This Design and Access Statement (DAS) has been prepared to draw out and focus on the design and access elements of the Proposed Development. Much of the information within this DAS is also provided in Chapters 2 and 3 of the Blair Hill Wind Farm Environmental Impact Assessment Report (EIA Report) that has been submitted alongside this DAS in support of the S36 application.

1.2.2 The main aims of this document are to:

- Outline the environmental and technical opportunities and constraints that were identified during the design process;
- To identify and discuss the processes and reasoning behind decision-making during the early development stages that have influenced the location, layout and design of the Proposed Development; and
- Discuss various aspects relating to access throughout the lifetime of the Proposed Development.

1.3 Legislative and Policy Framework

Requirement for a Design and Access Statement

1.3.1 The Proposed Development would have national development status, as defined in NPF4. It would make a valuable contribution to the delivery of the National Spatial Strategy, and would make a meaningful contribution to Scotland's renewable energy generation targets.

1.3.2 The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013, as amended, require applications for major developments to be supported by a DAS. There is no requirement for applications for consent under Section 36 of the Electricity Act 1989 to be supported by a DAS. However, the Applicant has opted to provide one as good practice.

1.3.3 This DAS has been prepared in line with the guidance set out in Planning Advice Note (PAN) 68: Design Statements (2003). PAN 68 outlines the purpose, use, and presentation of design statements, detailing the design principles that guide the layout and design of a development proposal. The DAS addresses the key issues recommended in PAN 68, providing a clear design philosophy for the development. It explains the design of the Proposed Development, demonstrating the steps taken to assess the Site and its context and how the design has been sensitively integrated.

1.3.4 While PAN 68 focuses on design aspects, more recent guidance emphasises the importance of ecological considerations. NatureScot's latest guidance emphasises the need for thorough habitat surveys, including Phase 1 habitat surveys and National Vegetation Classification (NVC) surveys, to inform potential redesigns or micrositing of wind farms. Additionally, it offers detailed advice on peatland restoration to minimise ecological impacts. Planning Circular 3/2022 has replaced previous guidance, updating planning application procedures, including those for wind farms. Siting and Designing Wind Farms in the Landscape

1.3.5 NatureScot has produced guidance to aid the siting of wind farms and the development of their design principles. The latest version of this guidance is 'Siting and Designing Wind Farms in the Landscape', Version 3a, published in August 2017.

1.3.6 The guidance recognises that wind turbines are large structures with the potential for significant landscape and visual impacts. However, it also acknowledges the necessity for more wind farms to meet renewable energy targets. Therefore, the challenge is to ensure that they are appropriately sited and designed in landscapes most suited to this form of development.

1.3.7 This guidance focuses solely on landscape and visual issues and does not cover wider technical design considerations, such as wind speed or grid access, nor does it address other natural heritage issues like impacts on birds, other wildlife, and habitats, which are also crucial in the design process.

1.3.8 The guidance primarily addresses Landscape and Visual Impact Assessment (LVIA) matters regarding wind farms. It covers aspects such as wind turbine design and layout, siting and designing wind farms, and designing in landscapes with multiple wind farms. The guidance offers advice on appropriate turbine form, size, scale, and layout, as well as on the siting and design of wind farms concerning landscape character, scenic value, landscape pattern, landform, perspective, and focal features. The guidance has informed this DAS, which outlines the Site's context and the design rationale for the Proposed Development. However, it is important to note that the guidance, largely unchanged since its original issue in 2009, may not fully address the implications of the height of turbines now being applied for, or the inevitable comparisons between proposed turbines that are over 200 m to tip and existing smaller models.

1.3.9 Including the access component ensures the DAS aligns with the latest guidance from NatureScot, which emphasises habitat survey requirements, and Planning Circular 3/2022, which guides updated planning procedures for wind farm developments. This comprehensive approach provides a detailed understanding of the ecological impact, access considerations, and design philosophy of the Proposed Development.

1.4 Site Context

1.4.1 The site of the Proposed Development ('the Site') is located in the Dumfries and Galloway Council (DGC) area, approximately 2.7 km north of the town of Newton Stewart and 4 km east of the River Cree. The location of the Proposed Development is shown on **Figure 1.1** in **Appendix 1**.

1.4.2 The Site comprises an area of 681.5 hectares (ha). It is set within open moorland and areas of commercial forestry. The elevation varies from 100 m Above Ordnance Datum (AOD) to 404 m AOD.

1.5 Overview of Proposed Development

1.5.1 The Proposed Development will comprise 14 wind turbines, 12 of which would be up to 250 m tip height (refer to **Figure 1.2**), and two of which would be up to 210 m tip height. Six of the proposed wind turbines would require nighttime lighting (indicated in **Table 1.1** below with *).

Table 1: Wind Turbine Coordinates

Turbine	X-coordinate	Y-coordinate	Turbine Height
T1*	242473	574210	250 m
T2	242694	573636	250 m
T3	242305	573204	250 m
T4*	241753	572981	250 m
T5*	242474	572624	250 m
T6	241874	572364	250 m
T7	242455	572030	250 m
T8	241652	571803	250 m
T9	242193	571483	250 m
T10*	241546	571218	250 m
T11*	242327	570903	250 m
T12	241607	570626	250 m
T13	242166	570330	210 m
T14*	241645	570030	210 m

1.5.2 Where necessary for assessment purposes in the EIA Report, a rotor blade diameter of 170 m has been used although the rotor blade diameter may vary (within the maximum turbine tip height) depending on turbine availability at the time of construction.

1.5.3 The Proposed Development would have an indicative installed capacity of approximately 92.4 MW with an operational life of 50 years.

1.5.4 In addition to the wind turbines, associated infrastructure for the lifetime of the Proposed Development will include:

- low to medium voltage transformers and related switchgear at each turbine;
- turbine foundations;
- a Site access track (providing access from the public road to the main Site boundary);
- on-site access tracks (providing access between all proposed infrastructure on the Site, as listed below);
- hardstand areas for cranes at each turbine location;
- a substation compound containing electrical infrastructure, control building, welfare facilities and communications mast;
- underground cabling; and
- watercourse crossings.

1.5.5 Temporary infrastructure required for construction would include:

- a construction compound;
- crane assist pads;
- blade laydown supports;
- boom supports;
- laydown areas;
- a concrete batching plant; and
- potential excavations/borrow pit workings.

1.5.6 The Proposed Development will provide various enhancement measures, including:

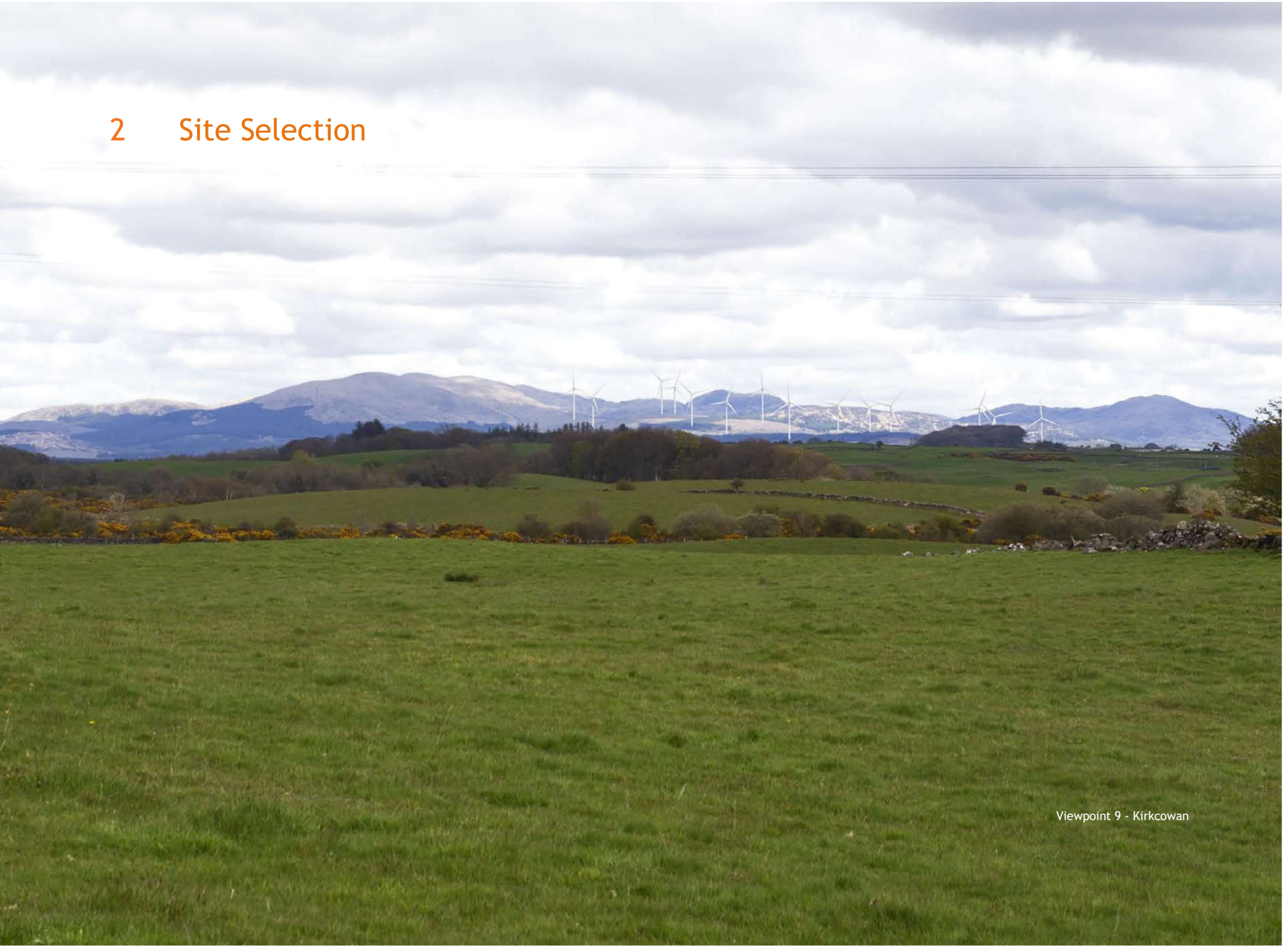
- Biodiversity enhancements (see Figure 2.17 in **Appendix 1**);
- Cultural Heritage enhancements (see Figure 2.17 in **Appendix 1**);
- Recreation and Access enhancements (see also the standalone Economic and Community Impact Report submitted in support of the S36 application).

1.5.7 To be able to address any localised environmental sensitivities, unexpected ground conditions or technical issues that are found during post-consent detailed intrusive site investigations and construction, agreement is sought for a 75 m micrositing allowance around all wind farm infrastructure, although this would be undertaken with due consideration of environmental constraints e.g. watercourses, high value habitat areas, areas of potentially deeper peat, etc.

1.5.8 The technical EIA assessments (presented in Chapters 6 to 15 of the EIA Report) have considered the potential for micrositing and it is considered that the proposed infrastructure could be microsited, if necessary, without resulting in potential new adverse effects. During construction, the need for any micrositing would be assessed and agreed with the relevant personnel on Site, e.g. Environmental Clerk of Works (EnvCoW).

1.5.9 More detailed information on the Proposed Development is provided in Chapter 2: Proposed Development of the EIA Report.

2 Site Selection



Viewpoint 9 - Kirkcowan

2.1 Site Feasibility and Selection Process

2.1.1 During early site finding and site feasibility studies, several constraints and opportunities were identified that led to the eventual decision by the Applicant to take this Site through the development, planning and design processes and ultimately submit an application for Section 36 consent.

2.1.2 The Site was progressed through the development, design and planning stages for reasons that included the following:

- There are no planning policies which, in principle, preclude wind farm development;
- Suitable access point from the public road network;
- The Site is not located within an area of national environmental importance, and it was considered that a wind farm could be developed on the Site with limited environmental effects;
- A minimum distance of 1 km could be kept between the turbines and the closest residential properties;
- The Site is large enough to accommodate sufficient and viable generating capacity; and
- Suitable ground conditions with limited areas of deep peat identified on the NatureScot Carbon and Peatland Map.

2.1.3 The Applicant utilises a sophisticated Geographic Information System (GIS) model for site selection which seeks to mirror planning, environmental, technical and commercial constraints. The GIS model is updated regularly when new data becomes available or when other factors change. Where available and appropriate, the GIS model incorporates published advice from statutory consultees.

2.1.4 The Applicant's use of the GIS model enables objective and consistent treatment of the whole country to assist with site selection.

2.1.5 The GIS model is based upon a combination of generalised and graded suitability layers covering environmental, economic, and technical aspects, known as 'key layers'. All key layers are assessed using a 0% – 100% suitability scale, represented by a 0 – 1 score, where 0 represents unsuitable and 1 represents 100% suitability.

2.1.6 The key layers included in the GIS model are as follows:

- wind speed;
- proximity to housing;
- natural and built heritage constraints; and
- slope constraint.

2.1.7 In addition, for each site, a visual sweep of the following 'informative layers' is carried out:

- national and local planning policy / development plans / spatial frameworks (as discussed in Chapter 5 of the EIA Report);
- Ministry of Defence (MoD) tactical training areas;
- international, national and local designated sites;
- electromagnetic links and utilities;

- proximity to other wind farm sites (pre-planning, consented and operational); and
- other information gleaned from maps or knowledge of the area such as masts, undesignated parks, tourist attractions, etc.).

2.1.8 These informative layers are included in the GIS model for information, but not scored and combined into the results.

2.1.9 The Applicant undertook an analysis of its GIS model for the Proposed Development Site, which scored medium to excellent preferability on all inputs. The combination of the scored layers resulted in an overall good score for the Site.

3 Key Constraints and Opportunities

Viewpoint 1 – Drumwhirn Cairn, Moor of Barclye

3.1.1 Once a suitable site for the Proposed Development had been identified, the Applicant undertook the process of identifying site-specific and development-specific potential constraints and opportunities for enhancements.

3.2 Key Environmental Considerations

3.2.1 The design of the Proposed Development was environmentally-led, as described in more detail in **Section 6.1: Design Approach**. Key drivers for change during the iterative design process were cultural heritage and landscape and visual aspects, as well as peat depth, hydrology and sensitive habitats. Initial baseline data was obtained through desk studies, and followed up with field studies. The environmental constraints that were taken into consideration throughout the design process included those listed below. More detailed descriptions of the topic-specific environmental constraints are included in the accompanying EIA Report, and a discussion of how the environmental constraints influenced the design is provided in **Section 6.3** of this DAS and Chapter 3 of the EIA Report.

Environmental Constraints

Environmental Designations

3.2.2 **Figure 3.1** in **Appendix 1** shows sites with environmental designations within 10 km of the Site. A brief summary of these is provided below, with full descriptions provided in the relevant technical chapters of the EIA Report.

3.2.3 The following designations are situated outwith the Site boundary but within 5 km (distances below from the Site boundary to the designation at its nearest point):

- Galloway Dark Skies park, adjacent to the northern boundary of the Site;
- Wood of Cree - Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) & Royal Society for the Protection of Birds (RSPB) reserve, (~3.4 km west);
- Glentrool Oakwoods SSSI and SAC (~3.5 km north);
- Galloway Oakwoods SAC (~3.7 km west);
- Merrick Kells SSSI and SAC (~4 km north),
- Lower River Cree SSSI (~4.2 km south) and Talnotry Mine SSSI (~4.4 km east);
- Newton Stewart Conservation Area (~3.1 km south);
- 74 areas of Ancient Woodland, including an area adjacent to the southern boundary and another small area adjacent to the eastern boundary of the Site;
- 13 Scheduled Monuments, the closest located approximately 600 m west of the Site boundary; and
- 121 Listed Buildings – 6 Category A, 49 Category B and 66 Category C.

3.2.4 The following environmental designations are located between 5 km and 10 km from the Site boundary:

- Talnotry Mine SSSI (~5 km east), Cairnaber SSSI (~5.2 km), Cairnsmore of Fleet SSSI (~6.2 km), Ellergower Moss SSSI (~6.9 km northeast), Ring Moss SSSI (~8.2 km southwest), Cree Estuary SSSI (~8.4 km southeast);
- Wigtown Bay LNR (~7.8 km south)
- River Bladnoch SAC (~8.3 km north);
- 86 areas of Ancient Woodland;
- 9 Scheduled Monuments
- 44 Listed Buildings – 1 Category A, 25 Category B and 18 Category C.

3.2.5 The potential for the Proposed Development to affect environmental designations and their qualifying interests was taken into account when identifying potential environmental constraints.

Site-Specific Environmental Constraints

3.2.6 Once the Site was identified, key issues and constraints for consideration in the design process were established through a combination of desk-based research, extensive field survey and consultation (through the EIA scoping process). The land within the Site covered by the following constraints was taken out of the developable area (i.e. area within which turbines could be sited) – see **Figure 3.5**:

- landscape designations and visual amenity;
- archaeological and cultural heritage assets and the applicable avoidance buffers;
- sensitive fauna and the applicable avoidance buffers;
- sensitive habitats and the applicable avoidance buffers;
- watercourses, private water supplies and sensitive surface water features and applicable avoidance buffers;
- topography and ground conditions and applicable avoidance buffers;
- proximity of residential properties and applicable avoidance buffers;
- aviation and defence constraints; and
- presence of utilities and applicable avoidance buffers.

3.2.7 Information in respect of the survey work to identify various key environmental constraints is described in detail in the technical chapters of the accompanying EIA Report (Chapters 6 to 15). The main environmental drivers for change during the design evolution included Landscape and Visual, Cultural Heritage, and Ecology constraints. These aspects and their influence on the design of the Proposed Development have been included in more detail in **Section 6** of this document and in Chapter 3 of the EIA Report.

Biodiversity Enhancement Opportunities

3.2.8 During the evolution of the design, several land parcels or 'Units' were identified within the Site, in consultation with the landowners, which offer an opportunity for biodiversity enhancement and habitat management to be implemented. An outline Biodiversity Enhancement and Management Plan (OBEMP) has been developed for the Proposed Development (see Technical Appendix 8.6 of the EIA Report). Implementation of the OBEMP will lead to a biodiversity net gain of +29 %.

3.2.9 In summary, the following proposals will be undertaken to enhance biodiversity within the Site and local area:

- Peatland restoration or enhancement;
- Acid grassland restoration;
- Riparian broadleaved woodland creation;
- Native broadleaved woodland creation (conifer replacement); and
- Implementation of living green roofs on the control and welfare buildings within the substation compound.

Cultural Heritage Enhancement Opportunities

3.2.10 There are several Scheduled Monuments and an Archaeologically Sensitive Area near the Site. Currently, these cultural heritage assets are occasionally visited by small archaeology groups and low numbers of recreational hikers. The Proposed Development provides an opportunity to improve access to these assets and to provide information boards for visitors to aid in their appreciation of the cultural heritage assets. See **Section 8** of this report and Technical Appendix 7.3 of the EIA Report for more detail.

3.3 Key Technical Considerations

3.3.1 Once the Site was selected and the decision had been made to take the Site forward to development stage, an initial layout of turbines and Site boundary (also referred to as the red line boundary) was generated based on several factors, such as:

- Hydrology;
- Terrain; and
- Turbine spacing requirements.

Wind Resource

3.3.2 The location and topography of the Site presents favourable wind conditions which would support the operation of an onshore wind farm. However, there are several technical constraints that needed to be accounted for during the design process to maximise energy output and consequently the scheme's commercial viability.

3.3.3 Efficiency modelling was conducted at key stages throughout the design process. Appropriate turbine spacing is essential for efficiency, particularly relative to the prevailing wind direction. If turbines are placed too close together, the energy extraction at the 'front edge' of the turbine array can create turbulent air for turbines behind, known as the wake effect, with a consequent reduction in potential power output.

Topography

3.3.4 The hilly topography of the Site presented some key ground engineering constraints, which were taken into consideration during the design of the layout of the wind turbines as well as the ancillary infrastructure. Steeper gradients require more 'cut-and-fill' works to enable access to and construction of wind turbines. There are very few low-gradient (flatter) areas within the Site that are suitable for location of infrastructure such as a substation and control buildings. Topography therefore directly influenced the location of these key components of the Proposed Development. The lack of available low-gradient areas within the Site also significantly influenced the decision not to include a battery energy storage scheme (BESS) as part of the Proposed Development.

Access

Abnormal Indivisible Load Transport Route

3.3.5 Several factors contributed to the decision to have wind turbine components delivered to the King George V docks in Renfrewshire and transported via abnormal indivisible loads (AILs) to the Site, including the capability of the port to receive, manoeuvre and store the turbine components until they can be transported by AIL vehicles to the Site. The AIL delivery route was established early in the project development stage to ensure that it would be both possible and feasible to have turbine components delivered to the Site. The development and assessment of the proposed AIL delivery route is described in more detail in **Section 8** of this report and in Technical Appendix 11.1 of the accompanying EIA Report.

3.3.6 A more detailed study would be completed should the Proposed Development be granted consent. As the turbine delivery vehicles are abnormal indivisible loads, a Special Order if required under The Road Vehicles (Authorisation of Special Types) (General) Order 2003.

3.3.7 The detailed off-site access requirements would be confirmed with Transport Scotland and Dumfries and Galloway Council's Roads Department once the exact requirements are established. A Traffic Management Plan would also be put in place to ensure safe operation, and this would also be established in conjunction with the aforementioned authorities.

Access from the Public Road to the Main Site Boundary

3.3.8 Access from the A712 (the nearest public road) to the Site will be obtained via a track which is currently used by Forestry and Land Scotland (FLS) to access the forested areas within and around the Site. The use of this track has several advantages from technical, economic and environmental perspectives. The use of an existing track that has been constructed to accommodate forestry vehicles will minimise the groundworks required and save time and resources for the Applicant.

3.3.9 There is one section of the track that crosses over the Penkiln Burn at the Auchinleck Bridge. However, the bridge is not suitable for use by AIL vehicles. Several options were considered for the crossing over this watercourse, and following consideration of several factors such as land

ownership, potential environmental impacts and AIL track alignment requirements, the Applicant opted to propose a new, single-span bridge over this watercourse to the south of the existing bridge. More details on the track alignment are set out in Technical Appendix 11.1 of the accompanying EIA Report and the proposed Penkiln Burn watercourse crossing is described in Chapter 2 and Technical Appendix 10.1 of the EIA Report. It will be subject to a detailed design post consent.

Internal Access Tracks

3.3.10 The internal access track layout has been designed in order to maximise the use and upgrade of existing tracks as far as reasonably practicable.

3.3.11 Several factors influenced the siting of the access tracks within the main Site boundary, including:

- Turbine locations;
- Locations of existing tracks and watercourse crossings within the Site;
- Topography; and
- Environmental constraints (described in more detail below).

Wind Turbine Tip Height Selection

3.3.12 One of the fundamental factors influencing the design of the Proposed Development has been the choice of wind turbine dimensions. At this stage, the exact model of turbine that will be used is not yet confirmed as it will depend on turbine availability at the time of construction. Maximum turbine parameters have been established to allow an EIA to be completed.

Alternative Wind Turbine Parameters Considered

3.3.13 A number of options were considered as to which turbine parameters to take forward to the final design of the Proposed Development. The range of potential turbines heights that could be considered was broadly influenced by the following factors:

- Site topography;
- Public road network and potential AIL route options;
- Efficiency and output of potential candidate turbines;
- Turbine manufacturers' design requirements; and
- Economic feasibility.

3.3.14 Throughout the design process, the Applicant considered turbines that were up to 180 m, 200 m, 210 m and 250 m tip height. These heights were tested with the use of wirelines and ZTVs, which indicated that turbines at a height of 250 m were largely screened by adjacent landform in views from the north and east and were capable of being accommodated in the landscape where views would be possible in locations to the south and west.

3.3.15

Selected Wind Turbine Parameters

3.3.16 Following consideration of the factors mentioned above, wind turbines up to 250 m tip height were selected as the preferred wind turbine height to take forward for the final design. To achieve the aim of maximising the capacity of the Site whilst minimising potential environmental impacts, it was determined that a smaller number of turbines at a taller tip height would be proposed.

3.3.17 At a later stage in the design process, it was decided that two of the fourteen proposed wind turbines included in the application for Section 36 consent would be up to a reduced maximum tip height of 210 m. This is described in more detail in **Section 6** of this report. Refer also to **Table 1** for proposed wind turbine maximum tip heights.

'Future-proofing'

3.3.18 In addition to the site-specific factors mentioned above contributing to the decision to opt for these taller turbines, the direction of travel of the design and manufacturing of onshore wind turbines within the industry is moving towards taller, more efficient turbines. This will contribute to increased generating capacity of onshore wind turbines and ultimately more significantly to energy security and the Scottish Government's 2030 onshore wind targets.

3.3.19 Furthermore, construction of the Proposed Development is estimated to commence in 2029. Planning to use taller, more efficient turbines is an effective strategy for future-proofing the design of the Proposed Development. With the speed at which technology is advancing, it is conceivable that by the time construction commences, the available technology will have significantly advanced, with the risk that smaller, less efficient turbines will become obsolete and no longer be available.

Operational Life – Why 50 Years?

3.3.20 Some of the earliest wind farms that were constructed in Scotland are starting to come to their end of life at around 30 years after commissioning. Some examples include Hagshaw Hill and Ben Aketil Wind Farms. There are numerous wind farms in Scotland that have been granted consent for life extension, where it could be demonstrated that the wind turbines are able to continue operating for an additional timeframe - recent life extension consents have been for an additional 10 to 15 years, with the Earlseat Wind Farm life extension having being granted in perpetuity. Furthermore, until relatively recently, applications for Section 36 consent for onshore wind farms were made for up to 40 years' operational life (e.g. North Kyle Wind Farm). However, advancements in technology have meant that with regular and ongoing maintenance, manufacturers are estimating that the newer (larger, more efficient) wind turbines will last for around 50 years before requiring decommissioning. A longer life span will enable clean energy generation for a longer period of time which would prolong energy security, energy supply and economic benefits but would also prolong the operational period thereby delaying the decommissioning and / or repowering of the wind farm.

3.4 Key Economic Considerations

Factors Contributing to Economic Feasibility

3.4.1 The Scottish Government's Onshore Wind Policy Statement (2022) encourages the development of onshore wind farms, and acknowledges that ' the Levelised Cost of Electricity (LCOE) must be sufficiently low for development to be economically feasible. Several factors contribute to determining the LCOE:

- Wind speed and flow across the Site to establish the capacity factor;
- Turbine costs;
- Grid connection costs;
- Effective utilisation of high wind speeds;
- Improved project economics by allowing larger rotor sizes accessible via main road networks;
- Efficiencies gained by using existing tracks on-site; and
- Proximity to existing grid infrastructure.

Economic Viability

3.4.2 The feasibility of the Proposed Development was tested at various stages of the iterative design process using financial modelling software to ensure that the proposal remained economically viable in the long term. This is to ensure investment can be mobilised for the high up-front costs required for the construction of an onshore wind farm, as is the case with most renewable energy projects.

Opportunities for Local & Community Economic Benefits

3.4.3 The Applicant places significant importance on the need to contribute to a just transition to net zero. The potential for the Proposed Development to maximise local economic impact has been a key part of the development proposal, as set out in more detail in the Economic and Community Impact Report which accompanies the Section 36 application. Throughout the design stages of the Proposed Development, the Applicant has considered several potential ways for the Proposed Development to benefit the local community, in consultation with the local community councils and other community groups. The Applicant is proposing the following initiatives:

- A tailored community benefits package worth almost £25 million that could include a Local Electricity Discount Scheme;
- Commitment to prioritising local suppliers in the provision of contracts; and
- Skills development and fostering ambition through onsite apprenticeships and archaeology field schools.

3.4.4 These potential initiatives are set out in more detail in the accompanying Economic and Community Impact Report.

4 Consideration of Alternatives

Viewpoint 2 – Crosbie Road, Newton Stewart

4.1.1 As part of the EIA process, developers must provide a description of reasonable alternatives considered by the design team, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.

4.1.2 The Applicant has considered a number of alternative turbine layouts for the Proposed Development, as outlined in Chapter 3 of the EIA Report. The finalised layout is the 10th iteration of the design since the project was acquired by the Applicant as a development opportunity.

4.1.3 The main alternatives including layout, turbine specification, location, size and scale have been considered for the Proposed Development and are described in more detail in this section and in Sections 6 and 8 of this report.

4.1.4 As for other sites entirely, the Applicant uses a range of criteria to select sites for the development of renewable energy projects. As part of the growth plans for the development of renewable energy projects, the Applicant is continually assessing potential onshore wind farm sites. This involves a desk-based assessment utilising secondary data and GIS to identify constraints at a particular site. Sites that are not deemed suitable at one given time (i.e. 'the alternatives') may at a later date be re-assessed in respect of technical and environmental constraints and opportunities, as well as up to date planning policy. Hence, for commercial reasons and in accordance with PAN 1/2013, it is not possible to disclose the names or positions of the alternative sites.

4.2 Do Nothing Scenario

4.2.1 In the absence of the Proposed Development, it is anticipated that the current land uses within the Site would continue as plantation forestry and sheep grazing. While this would mean no anticipated adverse environmental impacts arising due to the construction and operation of the Proposed Development, the do nothing scenario would also mean that the proposed community benefits to be derived from the operation of the proposed wind farm would not be realised, there would be no contribution to national net-zero targets and the expected beneficial impacts of the Proposed Development including biodiversity enhancement and improved access would also not be realised.

4.3 Alternative Designs

4.3.1 The Proposed Development's design has been revised nine times in response to various factors, including:

- environmental constraints information derived from desktop studies followed by detailed site investigations;
- pre-application consultation responses received from consultees;
- feedback gathered during the initial pre-application public consultation event; and
- technical design constraints associated with the proposed infrastructure to be utilised.

4.3.2 The various iterations of the Site layout are presented on **Figures 3.1 to 3.4** in **DAS Appendix 1** and discussed in more detail in **Section 6**.

4.4 Alternative Access Routes

4.4.1 For abnormal load delivery to Site (turbine blade, tower and nacelle components) the access route from King George V Docks to Site is taken forward as the preferred access route. This has been reviewed against a series of alternative routes centred around various Port of Entry (PoE) points for abnormal loads including the Port of Ayr, Stranraer Harbour, Loch Ryan Port and Kirkcudbright.

4.4.2 It has been established through the production of an Abnormal Loads Route Assessment (ALRA), in conjunction with consultation with the port authorities, abnormal load hauliers and roads authorities (Transport Scotland for trunk roads and local authority for local roads) that King George V Docks would be the preferred delivery route for abnormal loads.

4.4.3 From each alternative PoE the access route constraints were reviewed. Constraints such as tight turns, third party land requirements, structures, including those overhead and other obstructions were considered within the ALRA preparation.

4.5 Alternative Turbine Towers

4.5.1 During the design process, it was determined that it may not be possible to transport the tower sections of a standard steel tubular tower to the Site, turbine manufacturer dependent. As a result, an alternative turbine tower has been assessed, namely a hybrid tower which utilises sections of steel and sections of concrete (described in Chapter 2 of the EIA Report).

5 Consultation Activities

Viewpoint 4 - Glenvernoch Fell / Hill of Ochiltree

5.1.1 Throughout the design and EIA of the Proposed Development, the Applicant has been in communication with key consultees and delivered an extensive community consultation programme to both obtain input to the design and EIA process, and to provide information as the Proposed Development progressed. More detail of the Pre-Application Consultation (PAC) that was undertaken is set out in the PAC Report which accompanies the Section 36 application.

5.2 Consultation with Key Consultees

5.2.1 The Applicant recognised in the early development stages that the Proposed Development might have the potential to impact on the Scheduled Monuments which were within and near the Site, and consequently commenced consultation with Historic Environment Scotland (HES) and the DGC Archaeologist before the EIA Scoping stage. More detail on this consultation is provided in Technical Appendix 7.4 of the EIA Report. The influence of this consultation on the design and layout of the Proposed Development is described in **Section 6** of this report. The potential impacts on Cultural Heritage receptors was one of the main drivers for change during the iterative design process.

5.3 EIA Scoping

5.3.1 The Applicant submitted a Request for Scoping Opinion to the Scottish Ministers on 27th July 2023, which was accompanied by an EIA Scoping Report. A Scoping Opinion was received on 13th November 2023 with an addendum being issued on 6th February 2024. The contents of the EIA Scoping responses received from consultees was taken into consideration both during design, where appropriate, and to refine the scope of the EIA Report, where applicable. The influence of the Scoping responses on the design evolution has been captured in **Sections 6 and 7** of this report and the Scoping responses have also been summarised in each topic-specific chapter in the EIA Report.

5.4 Public Consultation

5.4.1 Two public consultation events were held in local venues in October 2023 and May 2024, as detailed in the PAC Report.

5.4.2 Comments submitted during the first event were taken into consideration during the design of the development, where relevant and appropriate, and also during the design of the community benefits offering(s) which the Applicant has detailed in the Economic and Community Impact Report which accompanies the Section 36 application.

5.4.3 The second event presented the 'chilled' design and offered visitors photomontages and wirelines of the Proposed Development from a range of viewpoints and a computer-generated fly-through video of the Proposed Development from key viewpoints which were identified in consultation with the Cree Valley Community Council. Some suggestions were received during the second public consultation event which are being considered, such as the provision of access for adaptive bicycles.

Community Liaison Group

5.4.4 Following the first public consultation event in October 2023, a Community Liaison Group (CLG) was established by the Applicant to create an effective and transparent channel of communication between the Applicant, the local community and other stakeholders. Five meetings have been held with the CLG to date and community newsletters were issued to update local residents as the design and EIA of the Proposed Development progressed.

6 Design of the Proposed Development

Viewpoint 6 - Cairnsmore of Fleet

6.1 Design Approach

6.1.1 The design of the Proposed Development was iterative and environmentally-led, while also systematically checking compliance of the evolving design with technical requirements / limitations and economic feasibility. At each design iteration, Geographical Information Systems (GIS) was used to map constraints and revise the design to address environmental issues and / or technical constraints or difficulties. This approach allowed for the overlay of base maps with spatial data, including environmental constraints and protected sites. It provided the project team with a comprehensive tool to review environmental and project details during technical meetings and design workshops.

6.1.2 Following the establishment of baseline environmental conditions through desk based studies and field work, environmental constraints information and recommended mitigation measures to be considered during the design were provided by the environmental technical specialists (listed in Chapter 1 of the EIA Report) to the Applicant's design team. This information was inputted to specialised software which treated identified environmental constraints as hard constraints and re-designed the wind farm layout to take account of those factors. A design workshop was held with all environmental and design engineering specialists to collaborate to produce a design that would minimise potential environmental impacts and account for feedback from consultees, while also meeting the Applicant's feasibility and technical requirements. The main objective of the design workshop and subsequent iterations of the design was to implement primary mitigation (also referred to as embedded mitigation) to eliminate or otherwise minimise potential environmental impacts.

6.2 Design Principles

6.2.1 As part of the iterative approach adopted by the Applicant, a number of design principles were incorporated into the Proposed Development as standard practice, including the following:

- consideration of the underlying landscape and its scale;
- consideration of operational, consented and proposed wind turbines neighbouring the Site;
- consideration of the size and scale of the Proposed Development appropriate to the location and proximity to residential properties;
- sensitive siting of the proposed infrastructure incorporating appropriate buffer distances from environmental and archaeological receptors to avoid or reduce effects;
- maximising the re-use of existing tracks as much as possible to access proposed wind turbine locations;
- optimising the alignment of new access tracks and hardstands taking due consideration to the topography of the Site, to minimise cut and fill, minimise the impact on sensitive peatland habitats and reduce landscape and visual effects;
- minimising watercourse crossings and encroachment on watercourse avoidance buffers;
- consideration of inclusion of borrow pit search areas to minimise the volume of the stone required to be imported to the Site;
- using the latest wind turbine technology, consisting of more efficient and larger turbines where these can be reasonably accommodated within the landscape, as supported by the Onshore Wind Policy Statement (OWPS) (Scottish Government 2022);

- Applying the waste management hierarchy; and
- Identifying potential opportunities for environmental enhancement, recreational access improvement and community benefits.

Landscape and Visual Considerations

6.2.2 Potential landscape and visual impacts were key issues throughout the design iteration process. Key considerations included:

- Views from nearby residential properties and other settlements;
- Potential effects on landscape character and designated landscapes;
- Potential nighttime effects from aviation lighting, particularly in views from the Galloway Dark Sky Park; and
- Cumulative visual effects in combination with existing developments and those proposed nearby.

6.2.3 Key design viewpoints were identified to reflect these landscape and visual receptors, ensuring that the layout minimised visual intrusion.

6.2.4 Initial designs incorporated up to 29 wind turbines at heights of 210 m to tip. At a later stage, turbines up to 250 m tip height were identified as the preferred maximum height. However, after reviewing concerns about visual impact and proximity to sensitive areas, including individual residential properties; recreational areas such as Merrick, Glentrool and the Wood of Cree; and Garlies Castle, the turbine count and placement were adjusted. Wind turbine heights were reduced in two locations, and the positions of the turbines were modified to minimise visibility from key design viewpoints, such as reducing the number visible from individual residential properties, Merrick and Newton Stewart. Refer to **Sections 6.3 and 7** for more detail.

Cultural Heritage Considerations

6.2.5 Cultural heritage was a significant consideration in the design process. Initial layouts were adjusted to avoid direct impacts on prehistoric Scheduled Monuments within the Site and their settings. Specific actions taken included:

- Establishing a 250 m avoidance buffer around Scheduled Monuments and a 20 m buffer around other cultural heritage assets (to prevent direct impacts e.g. damage to these monuments); and
- Relocating turbines to maintain the key visual relationships between monuments and to preserve their historical context.

Ecology and Ornithology Considerations

6.2.6 Ecological surveys were conducted across the Site from 2023 to 2024, including Phase 1 and NVC habitat surveys, bat surveys, protected species surveys, and fisheries surveys. Ornithology surveys were completed from 2022 to 2024 and included flight activity surveys, breeding bird surveys and wintering bird surveys. The following measures were taken:

- Sensitive habitats and priority peatland areas were avoided as far as possible;
- Buffers were created to protect areas identified through ornithology surveys, and turbines were relocated to reduce potential impacts on identified bird species.

Hydrology and Peat Considerations

6.2.7 Consideration was given to the impact on watercourses, with 50 m avoidance buffer zones applied throughout the design process to protect these features. The need to construct new watercourse crossings was minimised where feasible.

6.2.8 The design was informed by an in-depth understanding of the ground conditions, which evolved through baseline studies, including both Phase 1 and Phase 2 peat depth surveys and engineering site visits. The presence of localised pockets of deep peat (>1 m) were confirmed across some parts of the site. The design process has seen adjustments made to avoid areas of deep peat and steep slopes as much as possible, minimising ground disturbance. For instance, some turbines were relocated from open areas overlying priority peatland into less sensitive zones, such as commercial forestry, to mitigate the environmental impact.

6.2.9 This extensive design work has meant all access tracks are proposed outwith areas of deep peat and no floating tracks are required.

Site Access and Site Track Design Considerations

6.2.10 The proposed access to the Site has been carefully considered throughout the design process. The entrance to the Proposed Development is through third partyowned forestry track connected to the A712.

6.2.11 The following principles were applied during the design of the on-site tracks:

- Tracks make use of existing infrastructure as far as possible;
- Track length was kept to a minimum to reduce the requirement for stone and land-take and to reduce construction time;
- Gradients were kept to acceptable levels to accommodate the requirements of delivery vehicles to allow construction plant to move safely around the Proposed Development area;
- Tracks were routed to avoid sensitive archaeological, hydrological and ecological features as far as practicable; and
- Tracks were routed to avoid areas of deepest peat.

Borrow Pit Siting Considerations

6.2.12 Borrow pits are required as a source of rock to be used in the construction of the tracks, hardstandings and foundations. During design optimisation, the locations of infrastructure and track design was refined to minimise the volume of earthworks and cut and fill required to construct the Proposed Development. Potential locations for the borrow pits were identified based upon a review of geological mapping and Site reconnaissance.

6.2.13 The five borrow pit search areas have been identified as the maximum potential area of borrow put extraction, but it is not anticipated that these areas would be fully exploited. If the Proposed Development is consented, further intrusive geotechnical investigation would be carried out to identify which of the borrow pit locations would yield the required quality of rock for each aspect of the infrastructure.

Compounds – Siting and Design Considerations

6.2.14 The locations of the temporary construction compounds, batching plant, control building and substation are shown in **Figure 1.2**. These have been considered through the iterative design process and have been sited to avoid areas of deep peat and watercourses with the aim of limiting the effects on sensitive habitats. Steep areas have been avoided to reduce the requirement for cut and fill works.

6.3 Design Evolution

6.3.1 The main iterations of the turbine layout have been separated into 10 key stages and are described below within **Table 2** and shown on **Figures 3.2, 3.3 and 3.4** in **Appendix 1**. These iterations have taken into consideration the on-site environmental and engineering constraints to reduce the impacts on the wider landscape, archaeological features and avoid watercourses and sensitive habitats.

Table 2: Summary of Design Iterations

Design Iteration	Figure	Date	Key Parameters	Main drivers for change
A	3.2	February 23	• 29 Turbines; • All turbine heights 210 m; • Initial red line boundary.	N/A – Initial Layout
B	3.2	April 23	• 25 Turbines; • All turbine heights: 250 m; • Initial red line boundary.	Scheduled Monuments and consultation with HES, archaeologically sensitive areas, proximity to Wood of Cree and property to the west. Turbine heights increased to maximise yield.
C (Scoping Layout)	3.2	May 23	• 22 Turbines; • All turbine heights: 250 m; • Initial red line boundary.	Archaeologically sensitive areas and assets.
D	3.2	November 23		Baseline environmental survey data (e.g. peat, ecology, etc.). Intervisibility between Scheduled Monuments.
E	3.3	January 24	• 18 Turbines; • All turbine heights: 250 m; • Initial red line boundary.	Scheduled Monuments and consultation with HES
F	3.3	January 24	• 18 Turbines; • Turbine heights:	Residential Visual Amenity concerns (reduced tip heights for some turbines).

Design Iteration	Figure	Date	Key Parameters	Main drivers for change
G	3.3	February 24	• T1 – T15: 250 m, • T16-T18: 210 m. • Initial red line boundary.	All environmental factors (collaborative design workshop).
H (Design Chill)	3.3	March 24	• 16 Turbines; • Turbine heights: • T1 – T14: 250 m, • T15-T16: 210 m. • Reduced red line boundary.	Scheduled Monuments and consultation with HES
I	3.4	June 24	• 15 Turbines; • Turbine heights: ○ T1 – T13: 250 m, ○ T14-T15: 210 m. • Slight change to the red line boundary along sections of the main access track.	Axis of alignment of Chambered Cairn. Further environmental survey data (e.g. peat, ecology, hydrology, etc.). Realignment of access track at watercourse crossing near Auchinleck Bridge along the main access track. Slight amendment of red line boundary along sections of the track to include forestry management felling areas.
J (Proposed Development – Final Layout)	1.2 and 3.4.	October 24	• 14 Turbines; • Turbine heights: ○ T1 – T12: 250 m, ○ T13-T14: 210 m.	Removal of a turbine (previously labelled T5 in Layout I) to reduce potential impacts on the integrity of the cultural heritage setting of Dalvaird Cairn (SM1015).

Layout A (Pre-Application Layout)

6.3.2 Layout A was the initial layout developed primarily based on topographical and wind resource parameters. This design incorporated 29 turbines up to 210 m in height with the overarching engineering objective of designing a wind farm that is 'buildable' and optimised in terms of harnessing the wind resource on and around the Site.

6.3.3 This layout was submitted as part of the pre-application advice request to DGC and to HES on 15th February 2023. HES advised that the main concerns were the direct impacts to the prehistoric scheduled monuments within the Site, potential impacts on their setting, and disruption of the key relationships between the monuments in the area within and surrounding the Proposed Development Site. Each Scheduled Monument was

discussed, and specific concerns raised relating to the potential impacts of the Proposed Development as presented in Layout A on the Scheduled Monuments. In response to the advice received from HES, four turbines were removed from Layout A, which resulted in Layout B.

Layout B

6.3.4 As mentioned above, following pre-application advice from HES regarding Layout A, four turbines were removed. The removal of these turbines also increased the distance between the remaining turbines and the Wood of Cree Reserve and a residential property at Cordorcan. Buffers from mapped watercourses on-site were also applied. The slopes on the Site and the required separation ellipses were key drivers influencing this layout and played a significant role in the iterations of all subsequent layouts.

6.3.5 This design included 25 turbines up to 250 m in height, and the red line boundary covered an area of 1,234.9 Ha. However, it was evident at this early stage that more adjustments could be made to reduce potential impacts on the Scheduled Monuments and other cultural heritage assets within the Site boundary. Turbines were strategically located further away from archaeologically sensitive areas, with a 250 m avoidance buffer being established around Scheduled Monuments, and 20 m avoidance buffers around other cultural heritage assets.

6.3.6 This layout was submitted to HES and DGC for comment and input to the design. No formal response was received from DGC at this stage.

Layout C (Scoping Layout)

6.3.7 Following consultation with HES on Layout B, several changes were made to the turbine layout, including the removal of three more turbines (shown as T20, T21 and T22 on Layout A), and consequent realignment of the remaining 22 turbines, resulting in Layout C. The named turbines were removed from the layout to avoid potential direct impacts on the cultural heritage assets located in the area around T20, T21 and T22 of Layout B. Layout C had 22 turbines (all up to 250 m in height), and no changes were made to the red line boundary. All changes were implemented to facilitate mitigation through design for the designated cultural heritage assets within the Site.

6.3.8 This layout was used to scope the EIA and was presented on Figure 2.2 of the Blair Hill Wind Farm EIA Scoping Report, dated 27th July 2023. This layout was also presented at the first public exhibition held in October 2023. Feedback from the public exhibitions included concerns over proximity of turbines to Garlies Castle (SM7916) and this was incorporated at a later stage (see discussion of Layout G, below).

Layout D

6.3.9 Following environmental baseline studies, including Phase 1 peat probing and National Vegetation Classification (NVC) surveys, Layout C underwent revision; turbine locations were altered where required to avoid areas of potentially deeper peat and sensitive habitat areas, as far as practicable. Each revision required the turbine layout to be optimised for wind resource and checked for changes to potential engineering constraints.

Layout E

6.3.10 In their Scoping Response, HES identified potential settings impacts on the Scheduled Monuments that would require further investigation. HES attended an accompanied visit to the Site in November 2023 which included a visit to each Scheduled Monument within the Site boundary with wireline drawings that were held up at arms' length to demonstrate the likely views of the proposed wind farm from those locations.

6.3.11 Following the Site visit, HES provided comments and recommendations at a meeting with the Applicant and followed up in writing. The design was subsequently adjusted to remove a further four turbines to address HES's concerns relating to the potential impacts on cultural heritage setting of the identified Scheduled Monuments. HES raised concerns about the views between the Scheduled Monuments, and the alignment of the chambered cairn near Nappers' Cottage (SM5676) and potential intersection of the alignment with the turbines. This required further investigation by the Applicant which was undertaken at a later stage in the design process (described below for Layout H).

6.3.12 Additionally, several ecological constraints were updated following field surveys, though these had a minor impact on the overall design.

Layout F

6.3.13 Following an initial landscape and visual assessment of Layout E, one of the properties to the south-east of the Site boundary was identified as potentially being subjected to overbearing effects from the three closest turbines which were T16, T17, and T18. These were all located within 1.5 km of the property and would likely also be visible on approach to the property from the public access road. Potential residential visual amenity effects were preliminarily identified using wirelines that were produced specifically to inform design. Based on these, the tip heights of T16, T17 and T18 were reduced from 250 m to 210 m. The extent of the potential visual amenity effects on the property would be further evaluated at a later stage. Reduction in turbine heights were also favoured in relation to Garlies Castle (SM7916), which reduced potential impact on the castle, and its approaches.

6.3.14 Turbine heights across the rest of the Site were also tested with the use of wirelines and ZTVs, which indicated that turbines at a height of 250 m were largely screened by adjacent landform in views from the north and east and were capable of being accommodated in the landscape where views would be possible in locations to the south and west.

6.3.15 In addition, following the landscape and visual assessment of Layout E, revisions to the layout helped to ensure that visibility of the Proposed Development was reduced from key viewpoints, such as Merrick to the north where visibility was reduced from six turbines to three blade tips, and from Newton Stewart and Wigtown to the south where the spread of turbines in the view was reduced.

6.3.16 Layout F was taken forward into a collaborative design workshop which was attended by all members of the EIA team as well as the Applicant's key project design personnel.

Layout G

6.3.17 A design review workshop was held in February 2024 between key environmental technical specialists and the Applicant's key project personnel (including design engineers). Each of the turbines, the access tracks and other ancillary infrastructure were examined against the technical and environmental constraints to ensure that the infrastructure avoided sensitive constraints as far as possible.

6.3.18 Turbines T3, T5, and T16 were relocated from areas of high ecological sensitivity, particularly blanket bog and wet dwarf shrub heath. This adjustment required the repositioning of other turbines within the layout to optimise wind resource and account for other engineering constraints.

Layout H (Design Chill)

6.3.19 Layout H, the design iteration that was arrived at following the EIA Team design workshop, was submitted to HES for another round of comments and input. Based on the feedback received, the archaeology avoidance buffer in the western part of the Site was extended, with the following changes:

- Turbine T9 was removed to avoid impacting on the setting and likely alignment of the chambered cairn near Nappers Cottage (SM5676); and
- Turbine T18 was removed to avoid impacting on the setting of Garlies Castle (SM7916) in the south of the Site.

6.3.20 A visit to Glenshalloch was undertaken to inform the Residential Visual Amenity Assessment. The recommendation following this visit was also to remove T18, thereby increasing the distance between the nearby property of Glenshalloch and the nearest turbine.

6.3.21 Other turbines were consequently moved slightly to optimise wind resource and were once again checked against engineering constraints to ensure 'buildability'.

6.3.22 Due to the removal of all infrastructure from the west and south-western parts of the Site, the red line boundary was reduced. The revised red line boundary covered an area of 625.9 ha (excluding the access track).

6.3.23 This layout was presented at the public exhibition held in May 2024.

Layout I

6.3.24 Following Design Chill (Layout G), further targeted studies were undertaken to refine the layout.

6.3.25 Phase II peat probing was undertaken in and around areas where infrastructure would be constructed, e.g. turbine foundation and hardstand areas, access tracks, borrow pit areas, construction compound areas etc. The data from the Phase II peat probing surveys was fed into the design, with the result that some of the ancillary infrastructure was relocated or realigned to avoid areas of deeper peat and sensitive habitats.

6.3.26 Hydrology surveys were conducted at this stage. Survey results were taken into consideration and led to T2 of Layout G being removed from the layout, and T9 of Layout G being moved to avoid a watercourse that was not previously evident from available mapping.

6.3.27 The alignment of the chambered cairn was found to be 85 degrees at Nappers Cottage (SM5676) and was determined in line with the relevant guidance which was confirmed through a site visit. Upon advice, T10 was relocated as far south of its previous location as possible without infringing on other environmental constraints such as watercourse avoidance buffers and sensitive habitats. The relocation of T10 further south has moved it out of alignment with the chambered cairn's axis. The movement of T10 necessitated the very minor relocation of two other turbines to optimise wind resource. Ancillary infrastructure was adjusted to suit the realignment of the turbines.

6.3.28 This layout was intended to be the frozen design of Blair Hill Wind Farm, however further feedback from HES necessitated a further amendment (see next section).

6.3.29 **Layout I** is shown on **Figure 3.4**, and included consisted of 13 turbines up to 250 m in height and 2 turbines up to 210 m in height.

Layout J (Proposed Development – Final Layout)

6.3.30 Layout I was modified to remove a turbine (previously labelled Turbine 5 in Layout I) to reduce the potential for significant adverse impacts on the integrity of the setting at Dalvaird Cairn (SM1015). This was to reduce the potential of feeling enclosed by the Proposed Development. The frozen design was also adjusted to incorporate the realignment of the access track to cross at a proposed new watercourse crossing near Auchinleck Bridge. Layout J, the final layout of the Proposed Development is presented in **Figure 1.2** and **Figure 3.4**, and consists of twelve wind turbines of 250 m to tip, and 2 wind turbines of 210 m to tip (see **Table 1**), connected by access tracks which have been designed to take account of both environmental constraints and technical (engineering) requirements and constraints.

7 Design Evolution in Profile

Viewpoint 10 - NCR73 on Minor Road North of Wigtown

7.1.1 While the design and layout of the Proposed Development have been shown in mapping format, it can also be useful to understand how the evolution of the design would have influenced the views from key landscape and visual viewpoints and from sensitive cultural heritage receptor viewpoints. Wireline drawings of the Proposed Development at the following key design stages have been generated to show the evolution of the design in profile for demonstration purposes:

- Layout A (29 wind turbines);
- Layout C (Scoping Layout, 22 wind turbines);
- Design Chill (16 turbines); and
- Final Design (15 turbines).

7.1.2 Comparative wirelines have been generated for these key stages of the design from the following locations:

- LVIA Viewpoint 2: Corsbie Road, Newton Stewart;
- LVIA Viewpoint 4 Glenvernoch Fell / Hill of Ochiltree; and
- LVIA Viewpoint 7: Merrick;
- Cultural Heritage Viewpoint CH01: Dalvaird Cairn (SM1015)[1];
- Cultural Heritage Viewpoint CH02: The Thieves, Standing Stones (SM1044)[1];
- Cultural Heritage Viewpoint CH09: Garlies Castle.

7.2 Key Landscape and Visual Viewpoints

7.2.1 The wirelines provided in **Appendix 2** demonstrate how the changes made to the design and layout of the Proposed Development at the identified four key stages affected the views from the following viewpoints:

- Viewpoint 2: Corsbie Road, Newton Stewart;
  - Comparison of the layout from Layout A to the final design from this viewpoint shows a clear reduction in the spread of the wind turbines across the field of view from this location, as well as a reduction in turbine stacking, the removal of outlying isolated turbines and a consequent reduction of potential landscape and visual effects due to the more compact scheme.
- Viewpoint 4: Glenvernoch Fell / Hill of Ochiltree; and
  - The evolution of the design from this viewpoint clearly demonstrates the reduction in the number of turbines within the field of view, and while the breadth of the turbines across the view did not change noticeably, the reduction in the number of turbines visible from this location has resulted in reduction in the appearance of turbine stacking and a more ordered, equally spaced scheme.

[1] Please note that left and right wirelines of the Proposed Development from this Scheduled Monument have been provided to enable the entire development to be viewed from this location.

- Viewpoint 7: Merrick.
  - The evolution of the design from this key viewpoint within a sensitive receptor area clearly demonstrates the reduction of visibility of the wind turbines from Layout A where the view included several whole wind turbines and a number of partial views of wind turbines, to the Final Design where only two blade tips would be visible from this location. This has also meant that none of the proposed aviation lighting would be visible from Merrick.

7.3 Key Sensitive Cultural Heritage Receptor Viewpoints

7.3.1 The wirelines provided in **Appendix 2** demonstrate how the changes made to the design and layout of the Proposed Development at four key stages affected the views from the following sensitive cultural heritage receptors:

- Viewpoint CH01: Dalvaird Cairn (SM1015);
  - Comparison of the left half of the view towards the wind turbines from the cairn shows the removal of a wind turbine and an additional blade, the movement of the closest turbine to be further away from the Scheduled Monument and a more equal spacing of the remaining turbines with less turbine stacking.
  - The difference between the views of the wind turbines in Layout A and the Final Design is more evident in the right of the cairn. The evolution of the design has led to a noticeable change in the presence of wind turbines within the views to the right of this viewpoint, with fewer turbines visible, the closest turbines removed, and the remaining turbines being at least partially located behind the landform.
- Viewpoint CH02: The Thieves, Standing Stones (SM1044);
  - Comparison of the left half of the view towards the wind turbines from the standing stones shows a clear reduction in the number of wind turbines within the field of view and an increase in the distance between the wind turbines and the standing stones, with an overall reduction in the overall effect of the presence of these turbines on the view from this location.
  - Comparison of the right half of the view towards the wind turbines from the standing stones viewpoint location also demonstrates the change in the view resulting from the removal of a number of wind turbines, particularly those that were closer to the viewpoint, with the result that the final layout has wind turbines located further from the Scheduled Monument and less stacked/more evenly distributed within the view.
- Viewpoint CH09: Garlies Castle;
  - The evolution of the views from Garlies Castle from layout A to the Final Layout is evident from the reduction in spread of the turbines within the view, the reduction in the number of turbines that are present within the view and the increase in the distance between the turbines and the viewpoint.

8 Access Provisions

Viewpoint 8 - A75 near Creetown

8.1 Abnormal Load Route

8.1.1 Due to the oversized and heavy nature of wind turbine delivery vehicles, a detailed assessment of the public highways providing access to the Site is necessary. This ensures the roads are suitable and highlights any modifications required to facilitate access. A preliminary abnormal indivisible load route survey has been conducted and is detailed in Technical Appendix 11.1 of the EIA Report.

8.1.2 The selected route for abnormal load deliveries begins at King George V Docks in Glasgow, identified as the preferred Port of Entry (PoE) for turbine components. The route is as follows:

- The journey starts at KGV Docks, heading towards the M8 Motorway at Junction 25A.
- Vehicles then proceed eastbound along the M8 to connect with the M74(M) at Junction 1.
- Continuing south on the M74(M)/A74 Trunk Road, the route extends to the Scotland/England border, approximately 140 km away.
- Here, the route merges onto the M6(M) southbound, with vehicles exiting at Junction 42 Golden Fleece Interchange.
- At the interchange, vehicles loop back northbound on the A74(T) and then onto the A75(T) at Gretna.
- The route travels west on the A75(T) for approximately 115 km.
- Vehicles then take the A712, heading north for about 5.9 km, leading directly to the Site via private access.

8.1.3 This route has been reviewed in consultation with Transport Scotland and Dumfries and Galloway Council to ensure it is feasible and in keeping with the requirements for abnormal loads.

8.1.4 Upon arrival at the Site, the delivery vehicles will utilise the proposed Site entrance, designed to accommodate these large loads. Special arrangements such as temporary removal of street furniture, tree pruning, and traffic management may be necessary along the route, particularly in more constrained areas like narrow roads or sharp bends. Additionally, a Traffic Management Plan will be implemented to ensure the safe transport of turbine components, with considerations including:

- Reducing the number of construction vehicles where possible.
- Scheduling deliveries during off-peak hours to minimise disruption.
- Coordinating with local authorities and law enforcement for escorting abnormal loads.

8.1.5 Transport Scotland has advised that for planning purposes, only the transport of the blade component needs to be assessed at this stage. However, a full assessment of the tower and nacelle components will be required before any deliveries are scheduled.

8.1.6 A more detailed study of the off-site access requirements will be carried out by the turbine supplier should the Proposed Development receive consent. As these delivery vehicles are classified as abnormal indivisible loads, a Special Order is required under The Road Vehicles (Authorisation of Special Types) (General) Order 2003. Coordination with Transport Scotland and Dumfries and Galloway Council's Roads Department will continue to refine the route and ensure compliance with all regulatory requirements.

8.2 Site Access Junction

8.2.1 All traffic entering the Site will use the proposed Site entrance, which has been designed to accommodate the specific requirements of abnormal loads. This entrance will utilise a turning area to the west of the A83, designed to facilitate the movement of large vehicles onto the Site. The construction method for Site entrances will involve:

- Implementing traffic management measures during construction.
- Removing and carefully stockpiling topsoil.
- Installing new drainage systems to ensure existing drainage is not compromised.
- Completing road pavement works according to the design specifications.
- Installing line markings, signage, fencing, and visibility splay clearances as part of the design.

8.3 Internal Access Tracks

8.3.1 Access to the turbine locations would be gained via a network of onsite tracks, some of which would consist of existing tracks which will require upgrading to be able to facilitate the required construction and abnormal indivisible load vehicles. The access track layout has been designed in order to maximise the use and upgrade of existing tracks as far as reasonably practicable. It is anticipated that approximately 8.5 km of existing tracks will require upgrading, and approximately 3 km of new tracks will require to be constructed. **Figure 2.4** presents an indicative drawing of a typical on-site access track.

8.3.2 The access tracks would generally be unpaved (stone surface) and of a total width of 5.5 m (including a 0.5 m shoulder on either side). Turning heads of sufficient size to accommodate articulated vehicles would also be provided at several locations.

8.3.3 For areas with peat depths greater than 1 m, "floating" the access track over the peat using geogrid may be employed. The tracks will also be constructed with consideration of environmental impact, ensuring minimal disturbance to the landscape and adherence to best practices in construction.

8.3.4 This comprehensive approach to route planning and Site access aims to ensure a seamless and minimal impact delivery process for the wind turbine components, aligning with the overall project goals of environmental sensitivity and operational efficiency.

8.4 Cultural Heritage Trails

8.4.1 There are six Scheduled Monuments and a number of non-designated heritage assets, ranging from prehistoric to post-medieval in date, located near the Proposed Development. The Site has been in use for thousands of years, with the prehistoric assets indicating a use of the landscape for funerary and ritualistic practices and the post-medieval assets being agricultural in nature. The sites of archaeological and cultural significance are identified and discussed in detail in Chapter 7 of the EIA Report.

8.4.2 Due to the location and condition of the Site at present, these archaeological and cultural heritage assets are not accessible to the large majority of the public. Part of the Proposed Development includes enhancing accessibility to the heritage assets. It is proposed that a network of new and upgraded footpaths will form a signposted heritage trail through the Site as indicated in **Figure 2.17** in **Appendix 1**.

8.4.3 Other methods of enhancing the heritage trail experience are currently under consideration, and collaboration with local community archaeology groups and / or students is also under consideration, the purpose of which would be to provide training in the recording of heritage assets. More detail on proposed cultural heritage enhancements is provided in Technical Appendix 7.3 of the EIA Report.

8.5 Recreational Access

8.5.1 Prior to construction of the Proposed Development, an Outdoor Access Management Plan (OAMP) will be prepared in consultation with DGC. It will detail the maintenance of safe public access routes within and around the Site during construction and long-term public access during operation of the Proposed Development.

8.5.2 Throughout construction, measures to manage diversion routes would be agreed with the relevant authorities. The diversion routes would be clearly marked and for safety reasons would direct the user away from any areas of construction.

8.5.3 Although members of the public have the right to roam land in Scotland under the Land Reform (Scotland) Act 2003 there will be restricted access around the Proposed Development during the construction phase for health and safety purposes.

8.5.4 It is proposed that further details would be provided in an Outdoor Access Management Plan post consent. Public access to the Site after construction has been completed would be returned, although with some specific improvements to footpath infrastructure to facilitate public access which have been proposed as part of the Proposed Development. Appropriate warning, directional and identification signs for the purposes of health & safety would be installed on the turbines, transformers and at the substation compound. Access to these would be restricted to wind farm personnel. At all times, these facilities will be locked. Additionally, safety and/or directional signs will be placed at strategic points across the site, particularly on the public routes to inform members of the public that they are entering a wind farm, to make them aware of potential hazards and provide direction for emergency services should the need arise. Appropriate warning signs would be installed concerning restricted areas such as transformers, switchgear, metering systems and the substation compound. All on-site electrical cables will be buried with relevant signage. Any signage would be agreed with the relevant authorities prior to installation. It is proposed that further details would be provided in an Outdoor Access Management Plan post consent.

8.5.5 Oher aspects to be considered as part of the Outdoor Access Management Plan (to be agreed post consent) include potential installation of inclusive walkways that would be able to accommodate equipment such as wheelchairs, prams, bicycles and even potentially adaptive bicycles. Furthermore, existing parking areas will be enhanced to enable access to the proposed cultural heritage trails and access to the Proposed Development.

8.5.6 Recreation and access benefits are also discussed in more detail in the Socio-Economic and Community Benefit Impact Report which accompanies the Section 36 application. Parts of the Site will continue to be used for farming and forestry operations during the operational phase of the Proposed Development, and as such, responsible access will be promoted throughout the Site.

APPENDIX 1: FIGURES

APPENDIX 2: COMPARATIVE WIRELINES FROM KEY VIEWPOINTS

BLAIR HILL WIND FARM

FIGURE 1.1

SITE LOCATION

Site Boundary

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024

BLAIR HILL WIND FARM

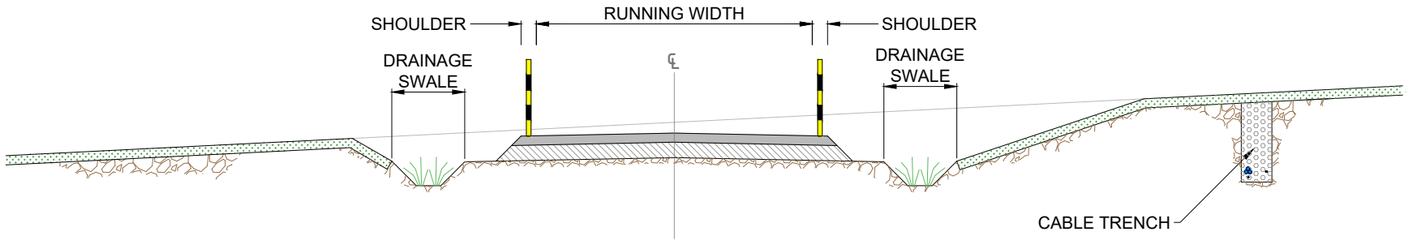
FIGURE 1.2

INFRASTRUCTURE LAYOUT

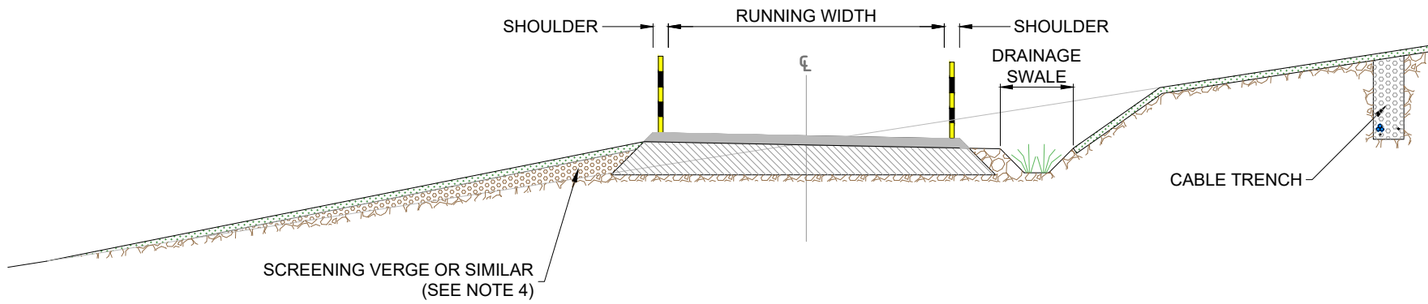
- Site Boundary
- Indicative Turbine Location (210m)
- Indicative Turbine Location (250m)
- Borrow Pit Search Areas
- Control Building and Substation
- Proposed New Watercourse Crossing
- Permanent Crane Hardstanding
- Temporary Crane Hardstanding
- Temporary Batching Plant
- Temporary Construction Compound
- New Site Tracks
- Upgraded Tracks
- Site Entrance

SCALE - 1:24,124 @ A3

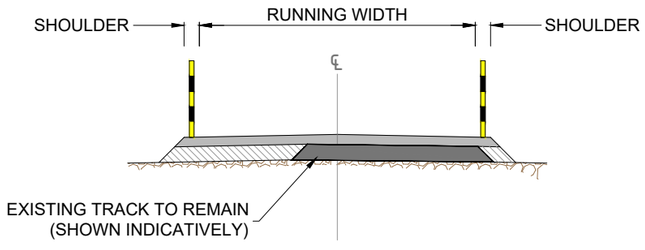
ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024



TYPICAL CUT TRACK SECTION



TYPICAL CROSS-SLOPE CUT TRACK SECTION



TYPICAL UPGRADE TRACK SECTION

KEY

- RUNNING SURFACE
- BASE/CAPPING LAYER
- TOPSOIL
- SUBGRADE
- PEAT LAYER/SOFT GROUND
- EXCAVATED MATERIAL
- GEOGRID
- EXISTING GROUND LEVEL
- SNOW POLES (WHERE REQUIRED)

BLAIR HILL WIND FARM

FIGURE 2.4

TYPICAL ACCESS TRACK

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. TRACK WIDTH TO INCREASE ON BENDS AND PASSING PLACES.
3. ALL EMBANKMENT SLOPES TO BE PROVIDED AT A STABLE ANGLE BASED ON THE PROPERTIES OF THE MATERIAL ENCOUNTERED ON SITE.
4. EXCAVATED MATERIAL WILL BE PLACED IN AGREED LOCATIONS. REINSTATEMENT AND/OR SPOIL MANAGEMENT PLANS WILL BE DEVELOPED IN LINE WITH CURRENT BEST PRACTICE.
5. TRACK CONSTRUCTION TYPE TO BE DETERMINED DURING DETAILED DESIGN. LAYOUT OF DRAINAGE, CABLE TRENCHES AND STORAGE BUNDS MAY VARY.
6. RUNNING SURFACE AND BASE/CAPPING LAYER TO BE FORMED FROM SUITABLE MATERIALS COMPACTED IN LAYERS.
7. GEOSYNTHETIC REINFORCEMENT OR SOIL STABILISATION MAY BE USED TO REDUCE THE DEPTH OF TRACK CONSTRUCTION. REQUIREMENT TO BE DETERMINED DURING DETAILED DESIGN.

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

DRAWING NUMBER	REV
04991-RES-ACC-DR-PT-001	1

SCALE - NOT TO SCALE @ A3

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024

BLAIR HILL WIND FARM

FIGURE 2.17

BLAIR HILL MASTERPLAN

- Site Boundary
- Peatland Restoration/Enhancement
- Peatland Restoration/Enhancement & Acid Grassland Restoration
- Acid Grassland Restoration
- Riparian Broadleaved Woodland Creation
- Broadleaved Woodland Creation (Conifer Replacement)
- Green Roof
- Interpretation Boards
- Existing Parking
- Proposed Heritage Trail
- Infrastructure layout

SCALE - 1:30,000 @ A3

ENVIRONMNENTAL IMPACT ASSESSMENT REPORT 2024

BLAIR HILL WIND FARM

FIGURE 3.1

ENVIRONMENTAL DESIGNATIONS

- Site Boundary
- Indicative Turbine Location
- 5 & 10 km Buffers
- Scheduled Monuments
- Conservation Areas
- Special Protection Areas
- Special Areas of Conservation
- Sites of Special Scientific Interest
- Ramsar
- Local Nature Reserves
- Ancient Woodland Inventory
- RSPB Reserves

Listed Building Category

- A
- B
- C

- Peat Class 1
- Peat Class 2
- Watercourses
- Geological Conservation Review Sites
- National Scenic Areas
- Wild Land Areas
- Galloway Dark Skies Park

SCALE - 1:166,000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2024

A
Pre-Application Layout

T3 T9 T1 T6 T15 T21 T18 T2 T11 T28 T23 T19 T16 T5 T10 T27 T26 T25 T22 T17 T4 T20 T13 T24 T7 T12 T14 T8 T29

B

T23 T2 T1 T3 T4 T5 T17 T6 T7 T18 T10 T19 T9 T22 T20 T8 T13 T21 T11 T14 T12 T15 T16 T24 T25

C
Scoping Layout

T7 T6 T8 T5 T9 T2 T4 T3 T11 T10 T1 T12 T13 T14 T16 T15 T18 T17 T19 T20 T21 T22

D

T7 T6 T8 T9 T5 T4 T2 T10 T11 T3 T12 T1 T13 T14 T16 T15 T18 T17 T19 T20 T21 T22

BLAIR HILL WIND FARM

FIGURE 3.2

DESIGN ITERATIONS A-D

Site Boundary

Indicative Turbine Location

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024

E

F

G

H

Design Chill

BLAIR HILL WIND FARM

FIGURE 3.3

DESIGN ITERATIONS E-H

Site Boundary

Indicative Turbine Location

- 210 m Tip Height
- 250 m Tip Height

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024

I

Design Freeze

J

Proposed Development

T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15

res

BLAIR HILL WIND FARM

FIGURE 3.4

DESIGN ITERATIONS I & J

- Site Boundary
- Indicative Turbine Location
  - 210m Tip Height
  - 250m Tip Height
- Infrastructure layout
- Borrow Pit Search Areas
- Control Building and Substation
- Permanent Hardstandings
- Temporary Hardstandings
- Temporary Batching Plant
- Temporary Construction Compound
- New Site Tracks
- Upgraded Tracks

SCALE - 1:30,000 @ A3

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2024

BLAIR HILL WIND FARM

FIGURE 3.5

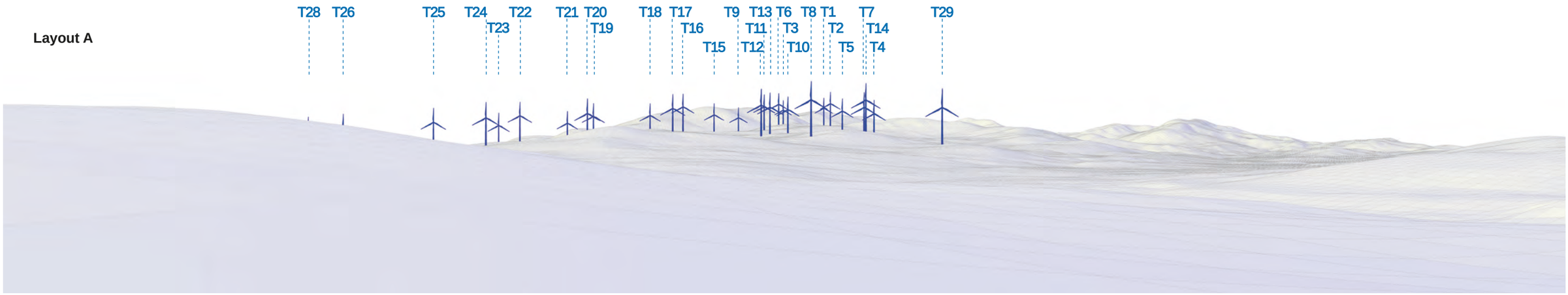
ON-SITE CONSTRAINTS

- Site Boundary
- Indicative Turbine Location
  - 210 m Tip Height
  - 250 m Tip Height
- Permanent Hardstandings
- Temporary Hardstandings
- New Site Tracks
- Upgraded Tracks
- Control Building and Substation
- Borrow Pit Search Areas
- Termp Construction Compound
- Temp Batching Plant
- Wet Dward Shrub Heath
- Peat (>1m deep)
- Slope (>20°)
- Ornithological Constraints
- Watercourse Buffer (50 m)
- HES Visual Constraints
- Forestry Buffer (150 m)
- Residential Buffer (7 rotor diameters)
- Blanket Bog

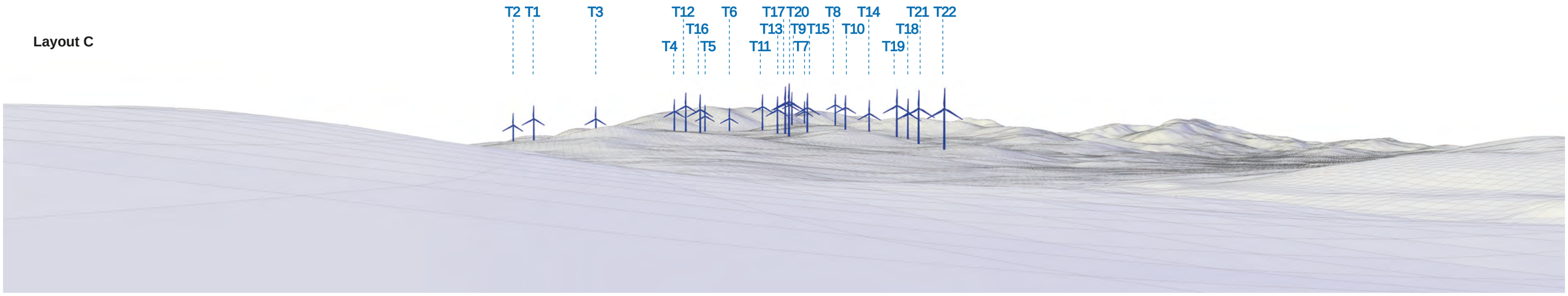
SCALE - 1:40,000 @ A3

ENVIRONMENTAL STATEMENT & PLANNING APPLICATION 2025

Layout A



Layout C



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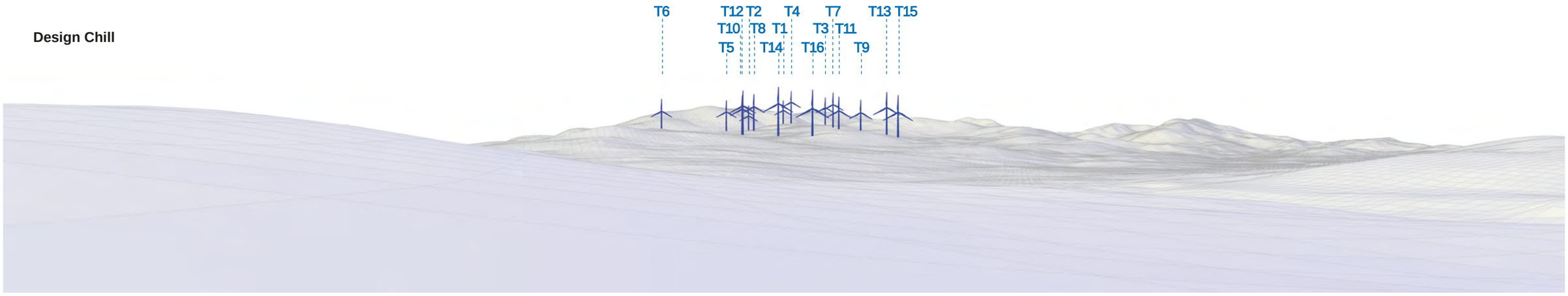
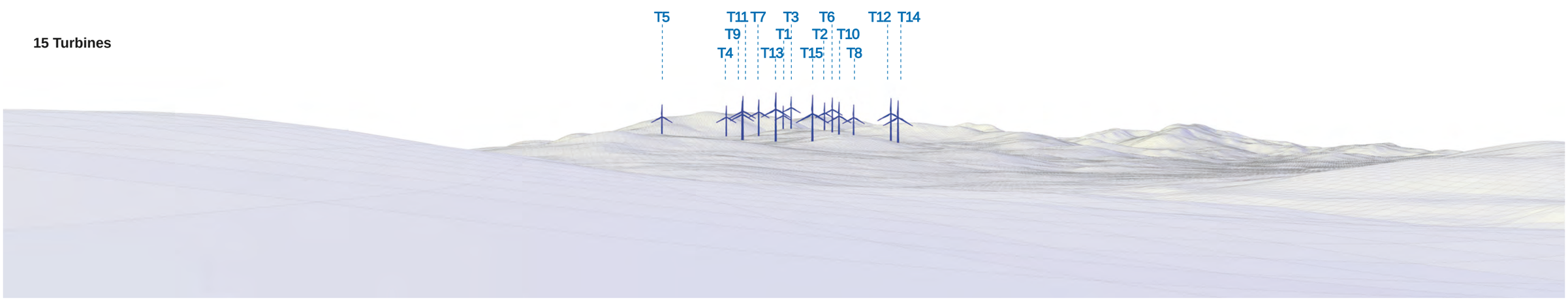
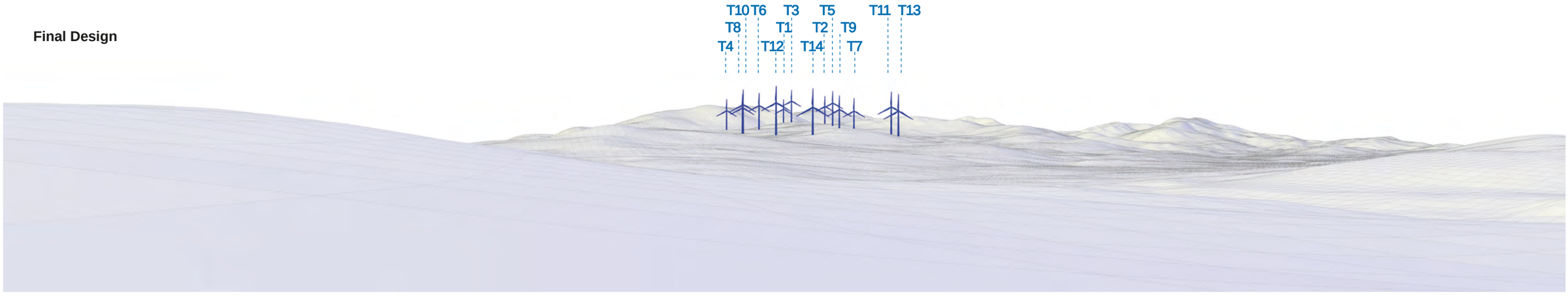


15 Turbines

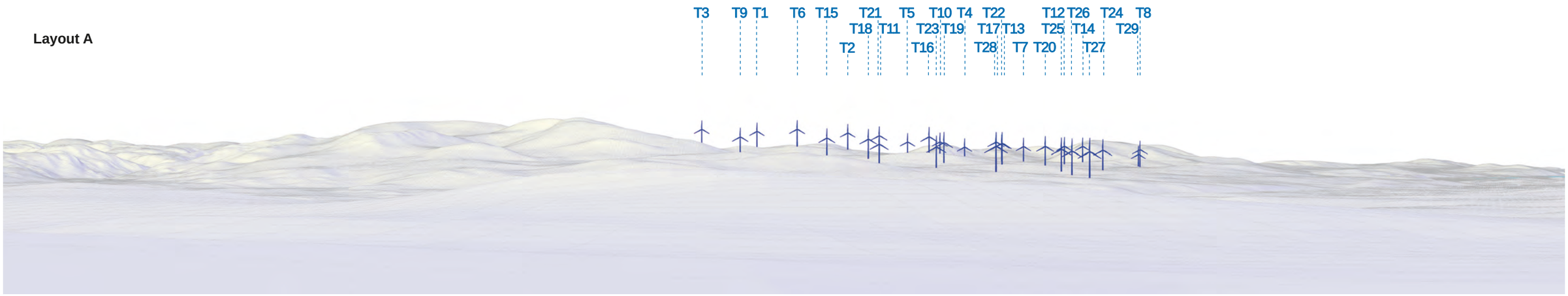


Final Design



Viewpoint 2: Corsbie Road, Newton Stewart

Layout A



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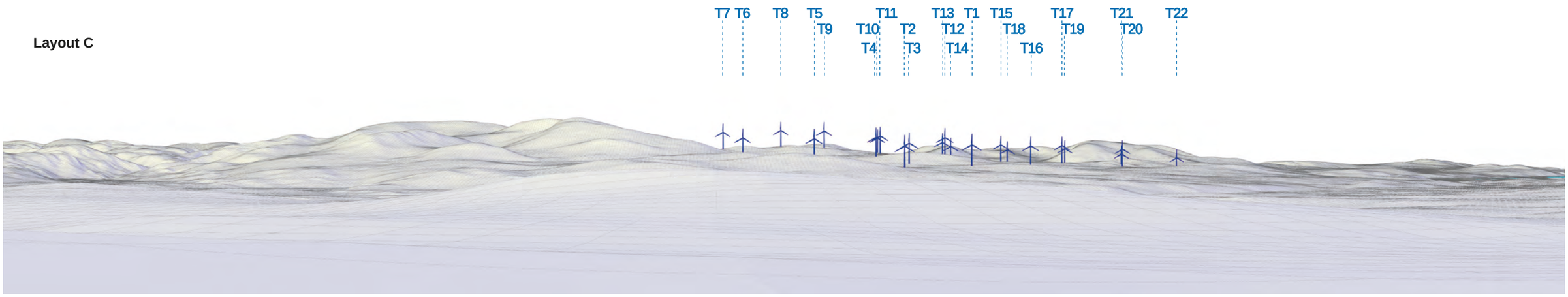

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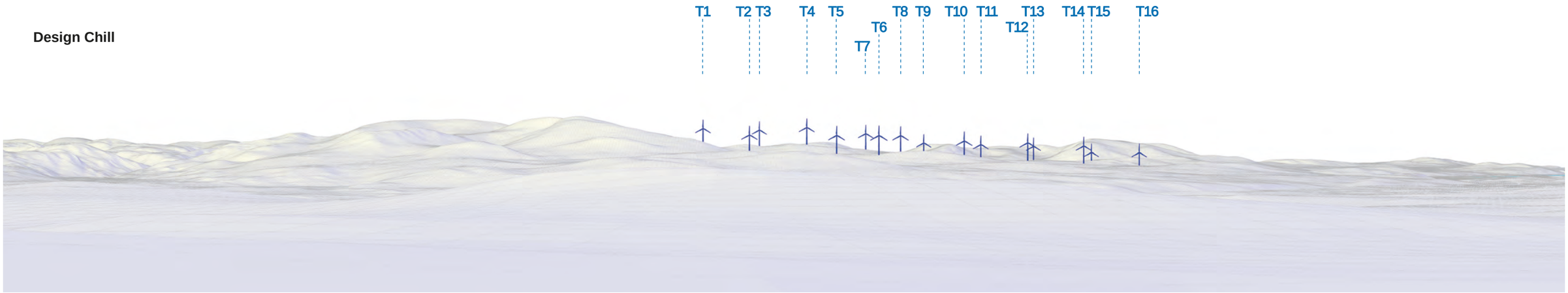
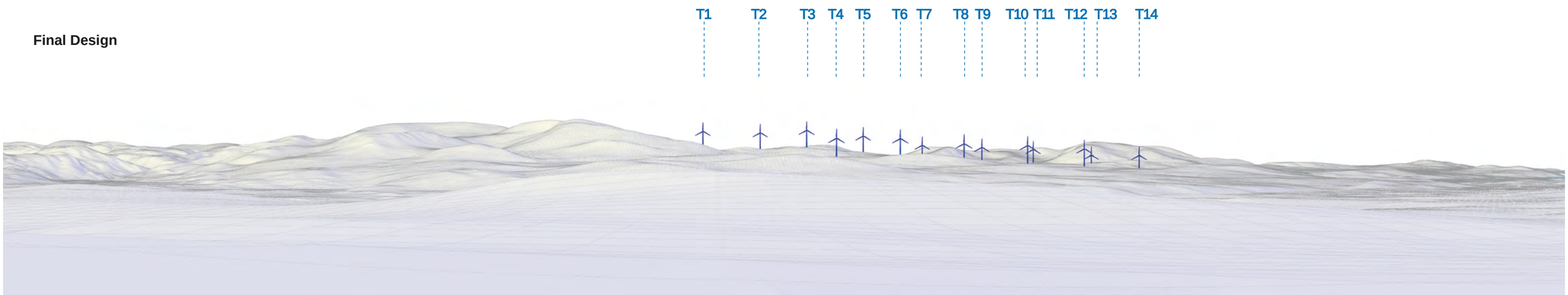


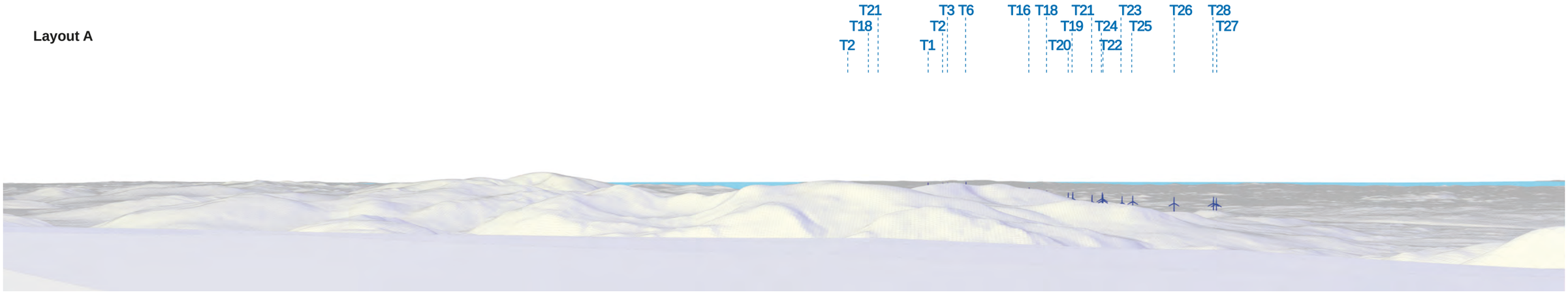
15 Turbines

Final Design



Viewpoint 4: Glenvernoch Fell / Hill of Ochiltree

Layout A



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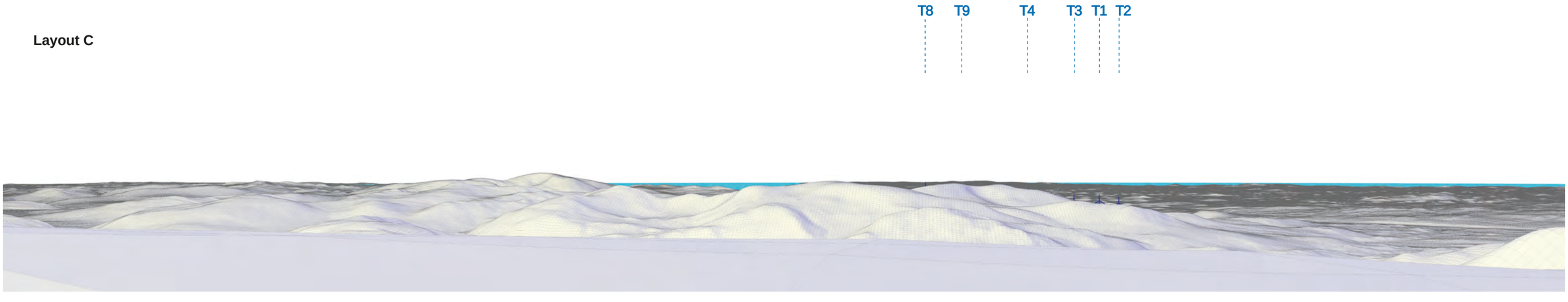

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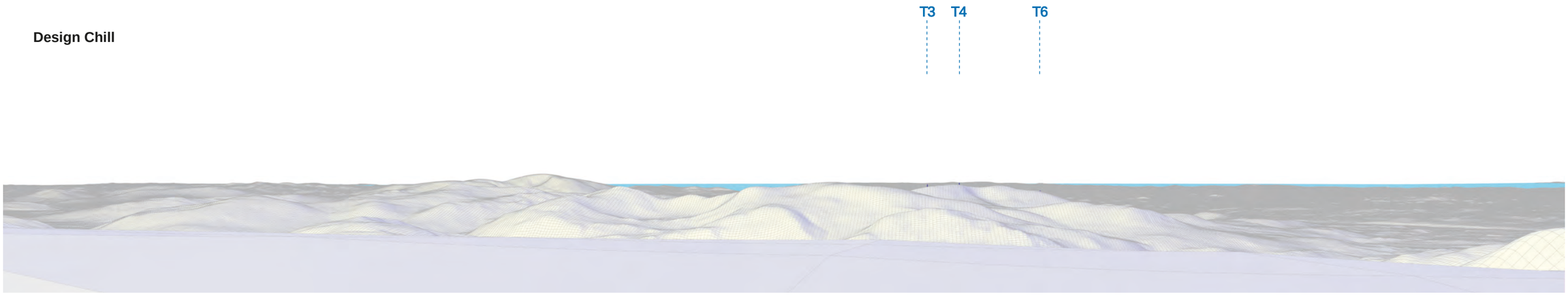
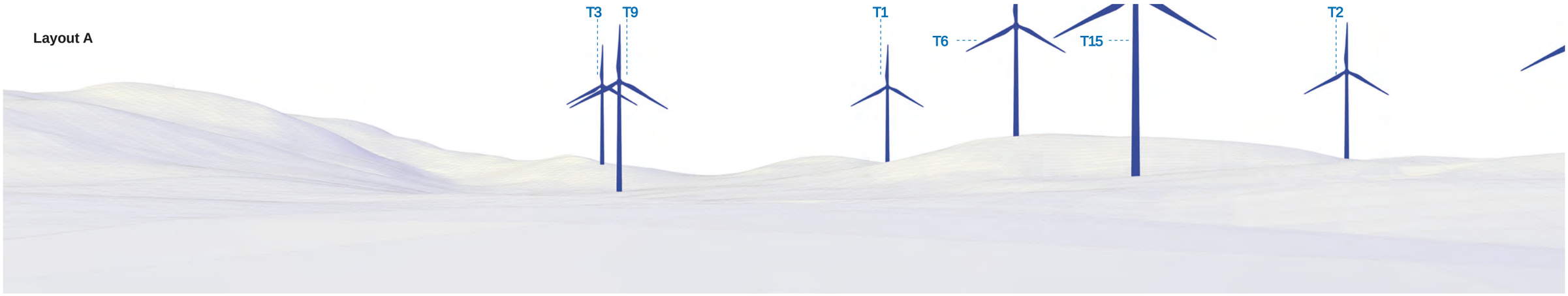


15 Turbines

Final Design

Viewpoint 7: Merrick

Layout A



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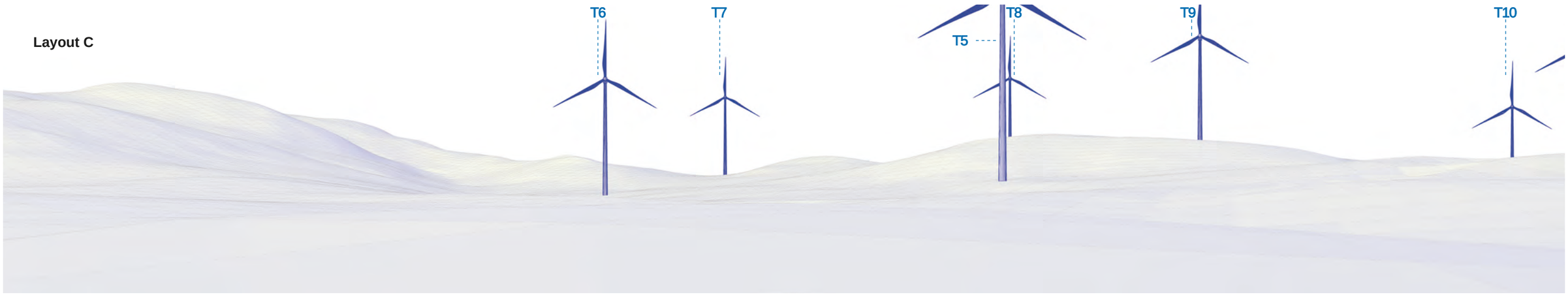

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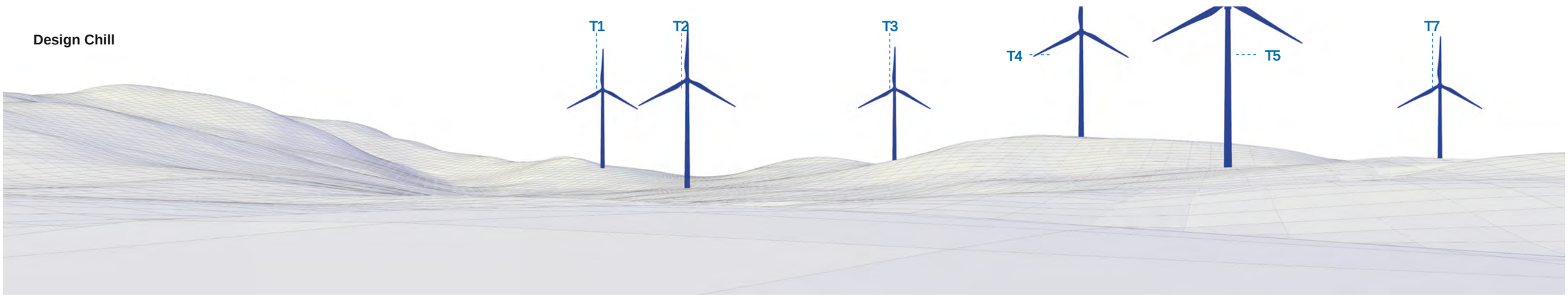
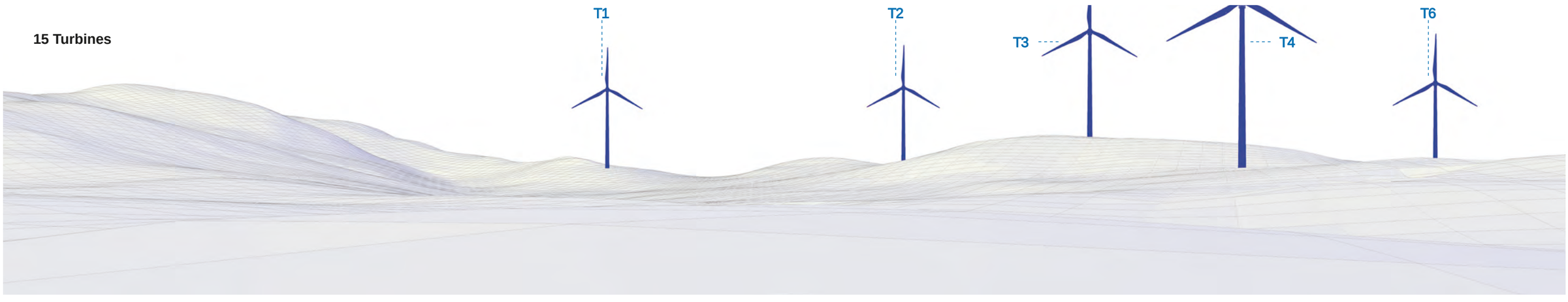


15 Turbines



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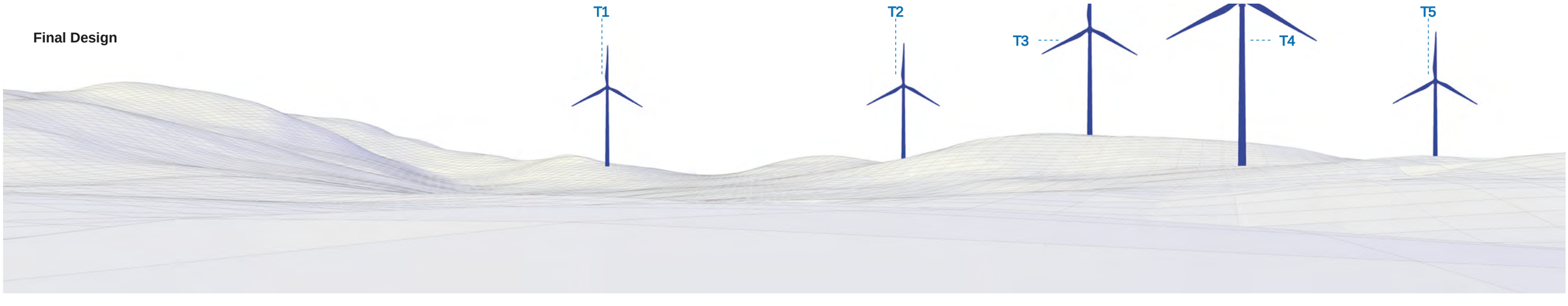
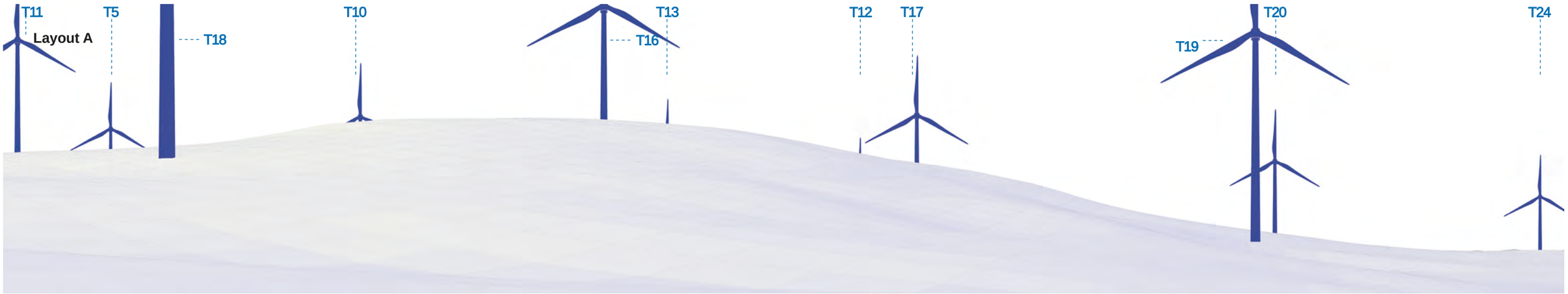
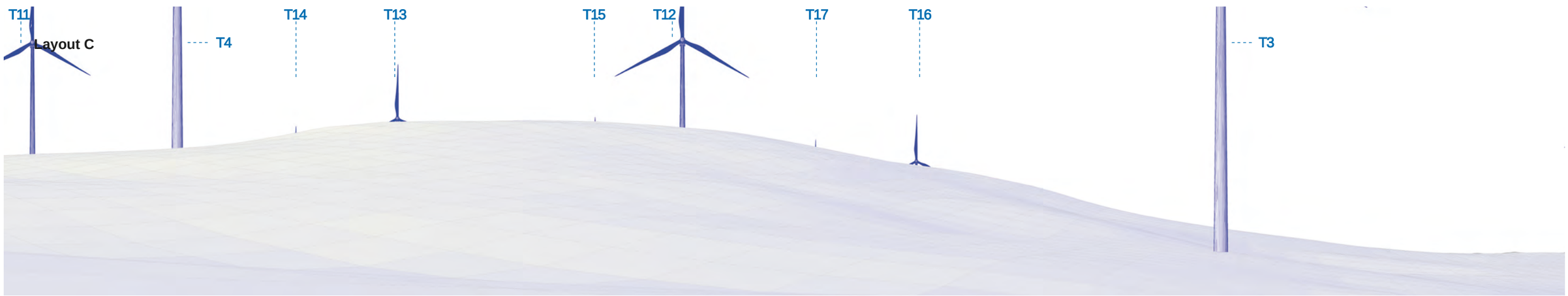
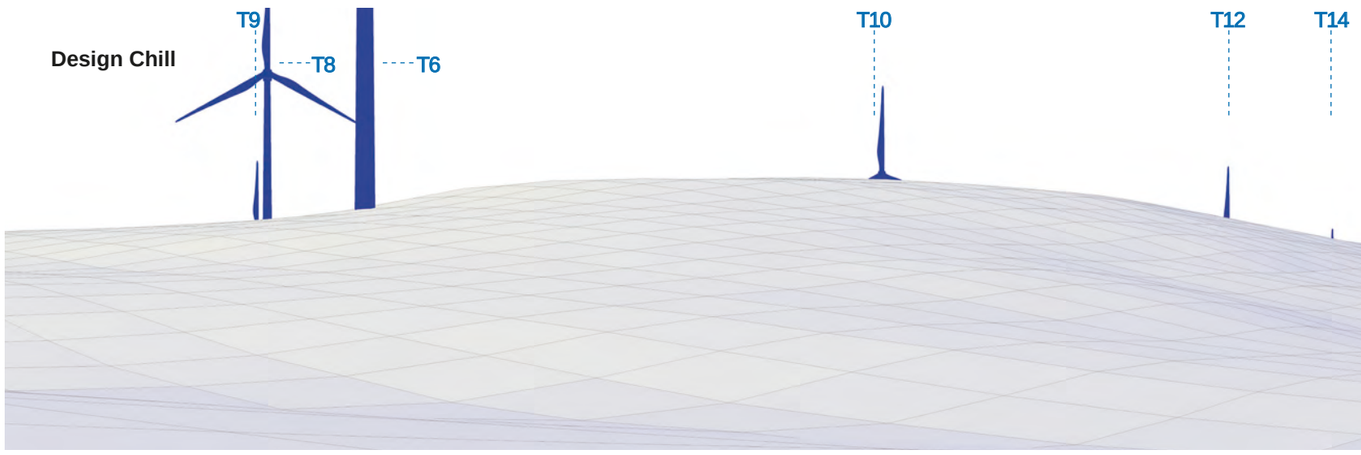
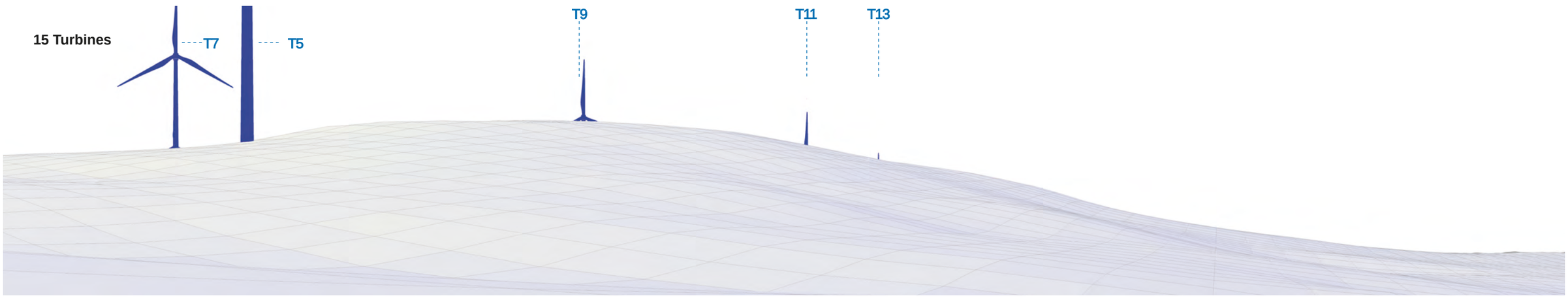


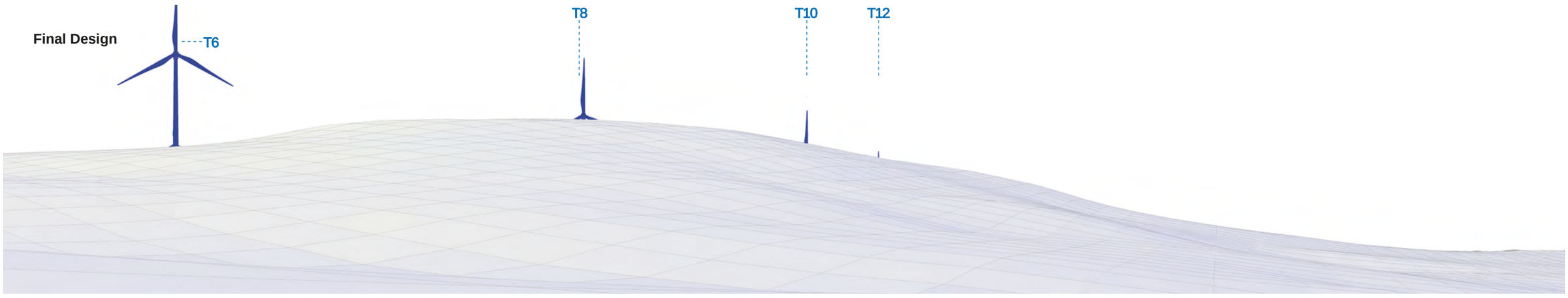
Viewpoint CH01: Dalvaird, Cairn (SM1015) - LEFT





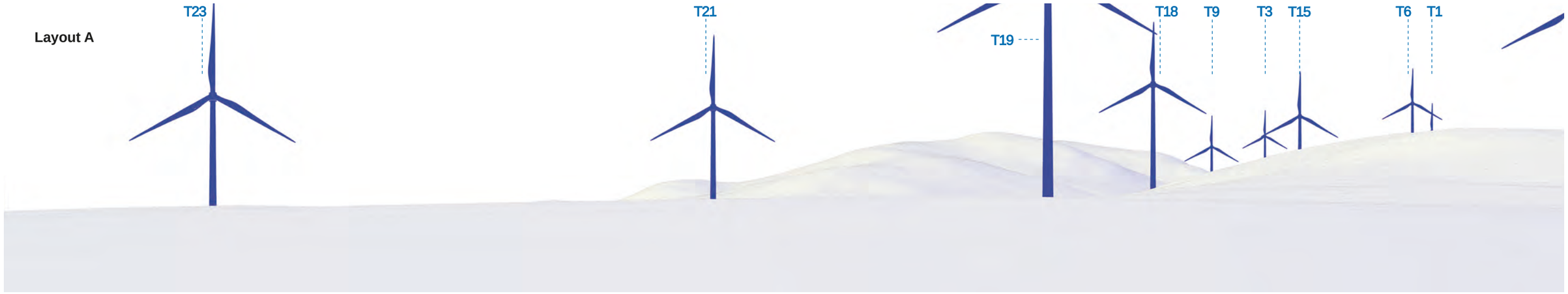






Viewpoint CH01: Dalvaird, Cairn (SM1015) - RIGHT

Layout A



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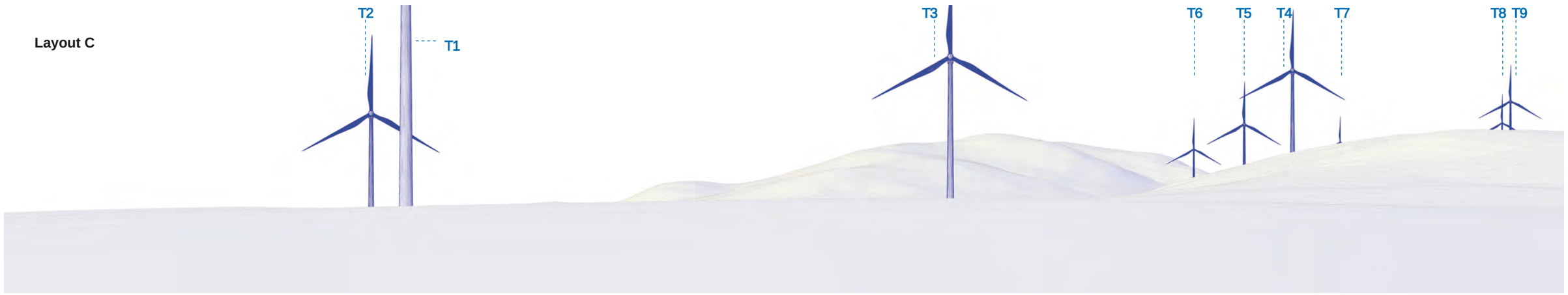
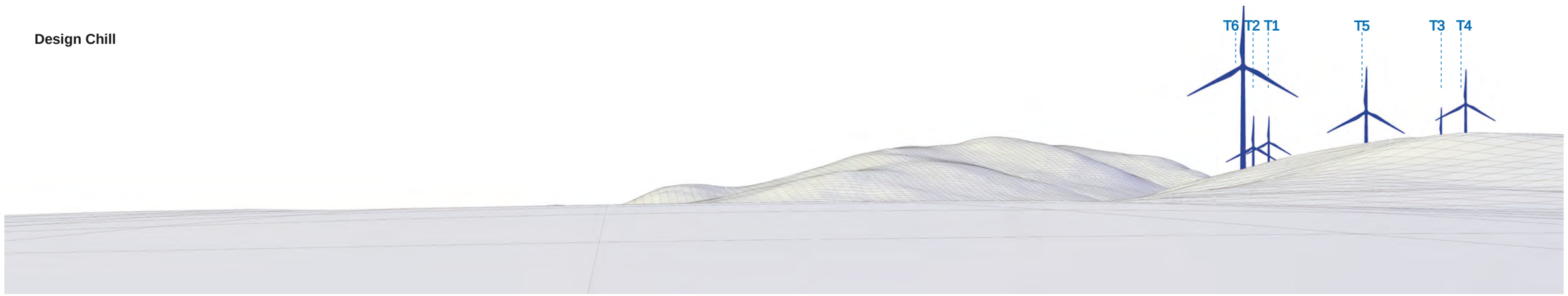


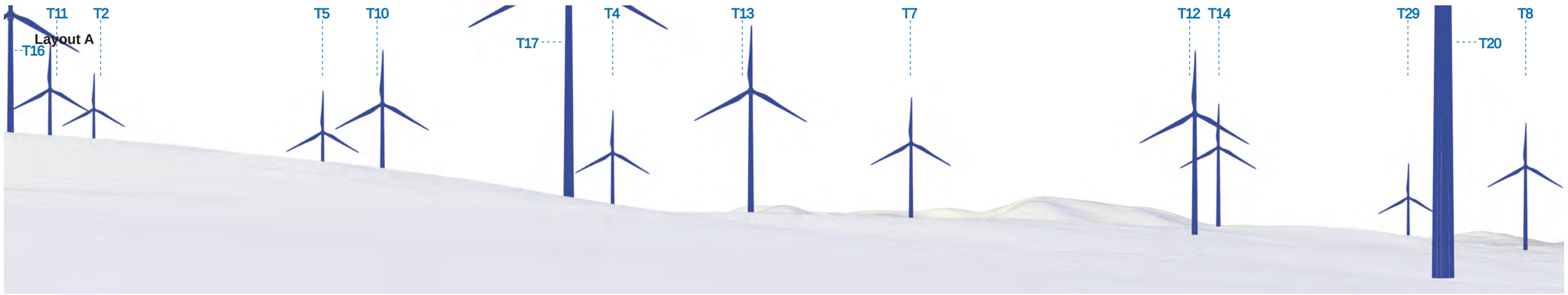
Design Chill

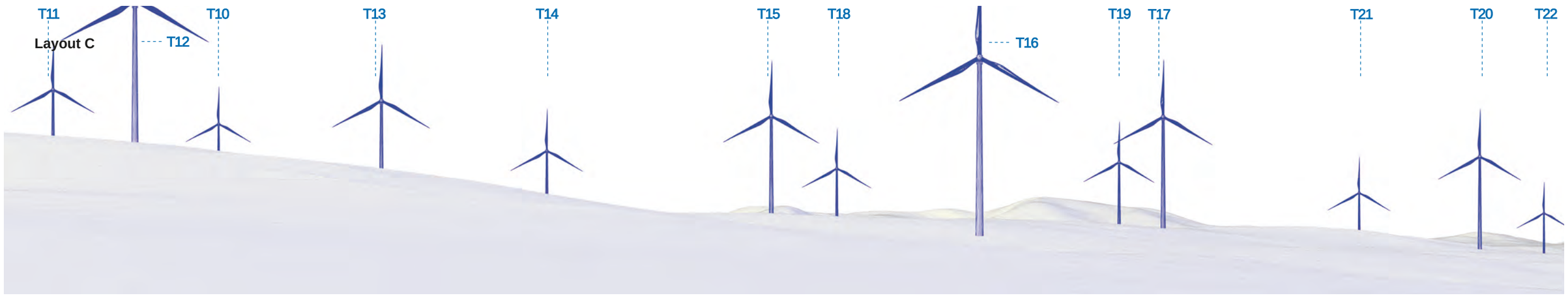


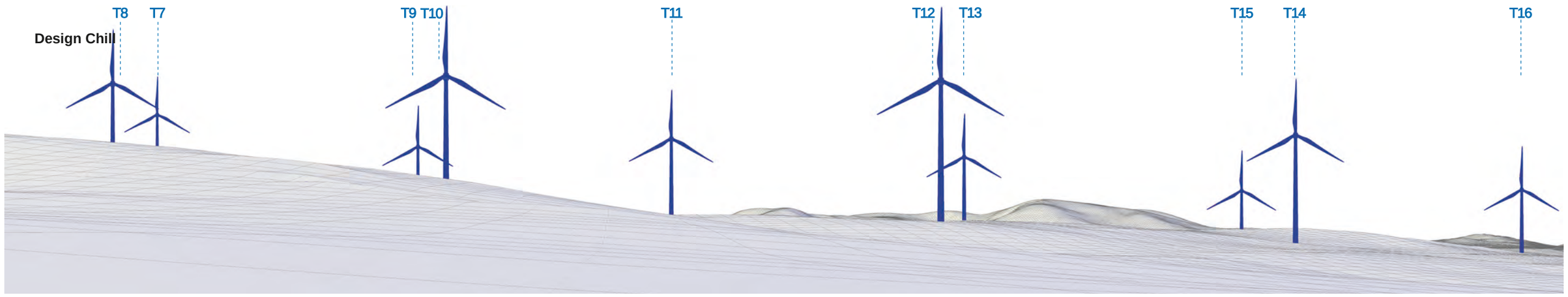
15 Turbines

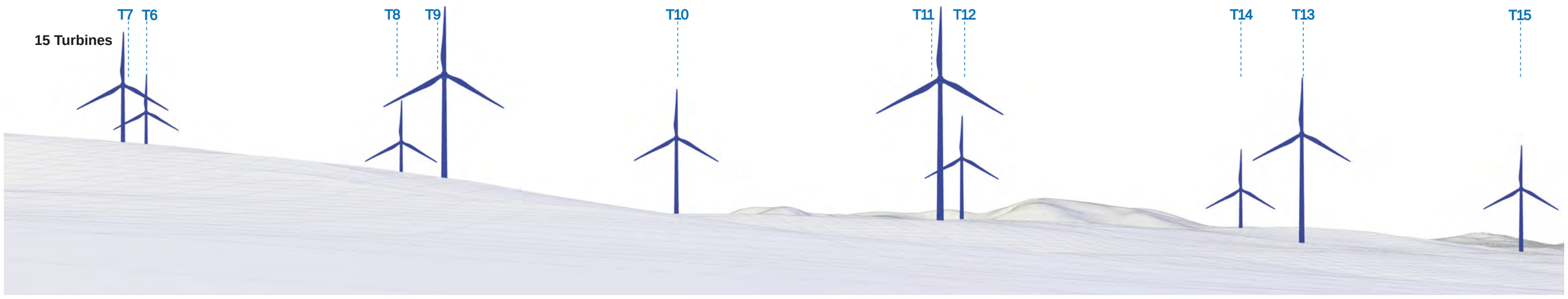
Final Design

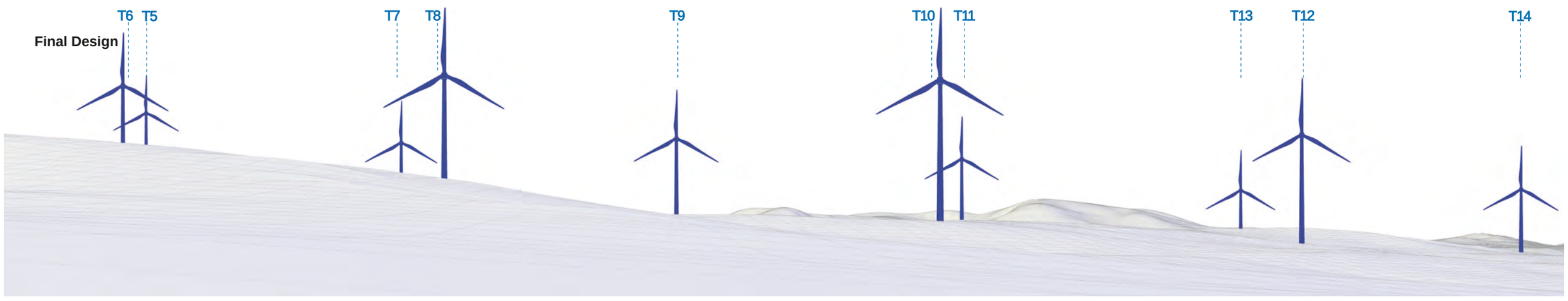
Viewpoint CH02: The Thieves, Standing Stones (SM1044) - LEFT











Viewpoint CH02: The Thieves, Standing Stones (SM1044) - RIGHT

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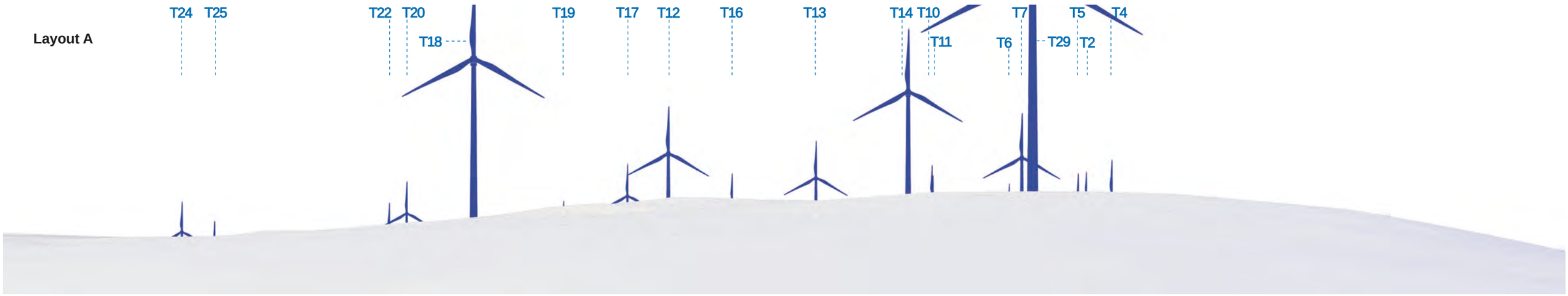

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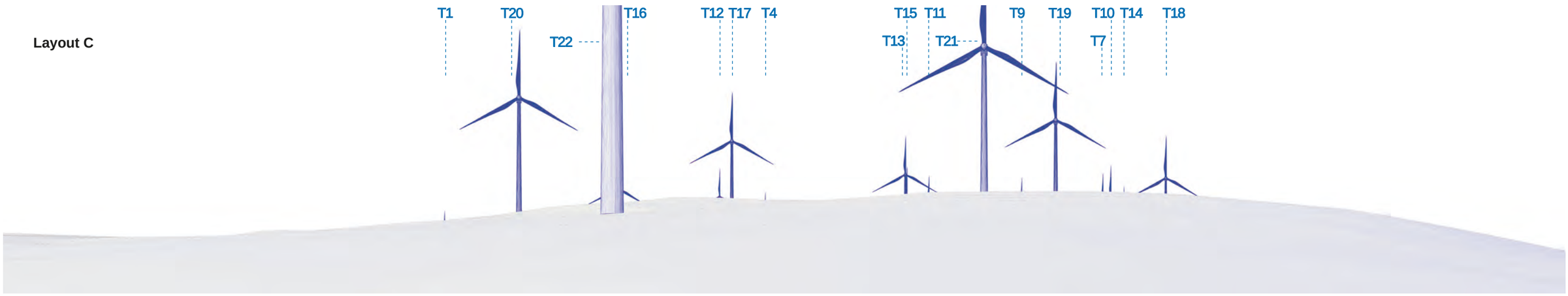
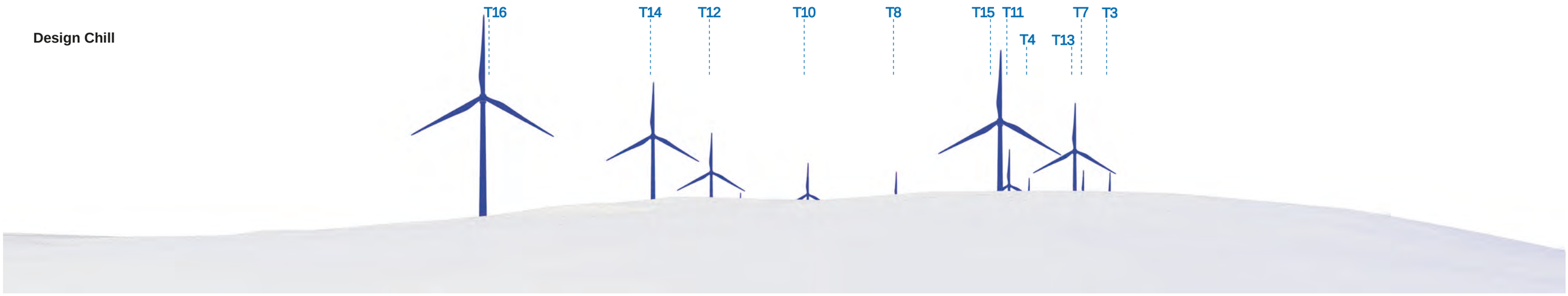
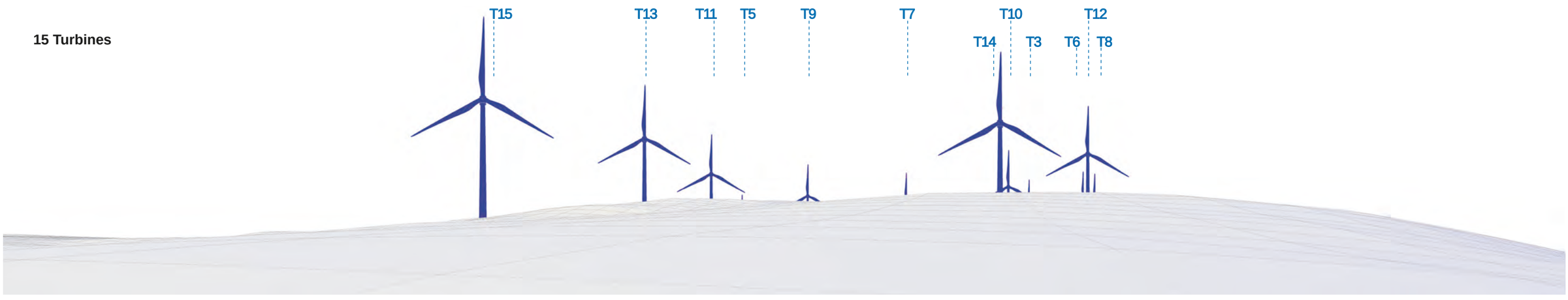


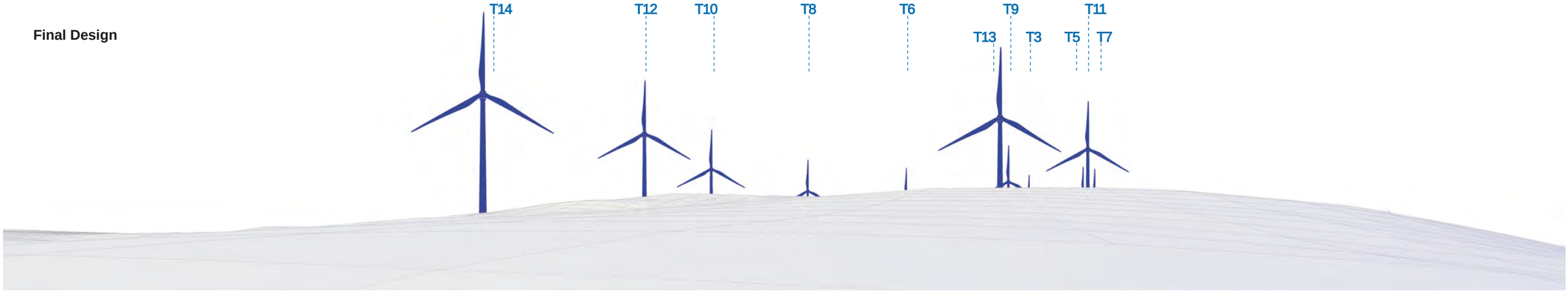
Design Chill



15 Turbines



Final Design



Viewpoint CH09: Garlies Castle (SM7916)