REPOWERING AND REPLACEMENT OF COLD NORTHCOTT WIND FARM

ENVIRONMENTAL IMPACT ASSESSMENT VOLUME 3: NON-TECHNICAL SUMMARY

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Prepared for:
WMW Consultants Ltd

RMA ENVIRONMENTAL

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1 INTRODUCTION

Background

1.1 This document provides a non-technical summary of the findings of the Environmental Statement (ES), which has been prepared on behalf of WMW Consultants Ltd for the proposed repowering and replacement of 22 wind turbines at Cold Northcott Wind Farm in Cornwall. The location of the application site is shown in Figure 1 below.

1.2 The principal objective of the Environmental Impact Assessment process is to provide Cornwall Council (and other interested parties) with sufficient information on the proposed development and its likely environmental effects to assist in making a decision on whether planning permission should be granted.

1.3 There are three basic steps used within the EIA process in order to meet this objective, which are as follows:

- **establish existing environmental conditions** (known as baseline conditions) including any current environmental problems;
- **identify, predict and assess the significance of the likely environmental effects**, for both the construction and operation phases of the development which could be expected as a result of the proposed development; and
- **design mitigation, management and enhancement measures**, which are proposed to be adopted to prevent, reduce or remedy any significant adverse effects. Consideration is also given to measures that would be promote positive environmental benefits as a part of the proposed development.

1.4 Consultation with statutory and non-statutory organisations has been undertaken throughout the pre-application process and feedback received during a public consultation event (held on 21st March 2023) has helped to inform and shape the development proposals.

1.5 Cumulative effects from other proposed or committed wind turbine developments in the vicinity of the application site have been considered within each of the technical chapters.

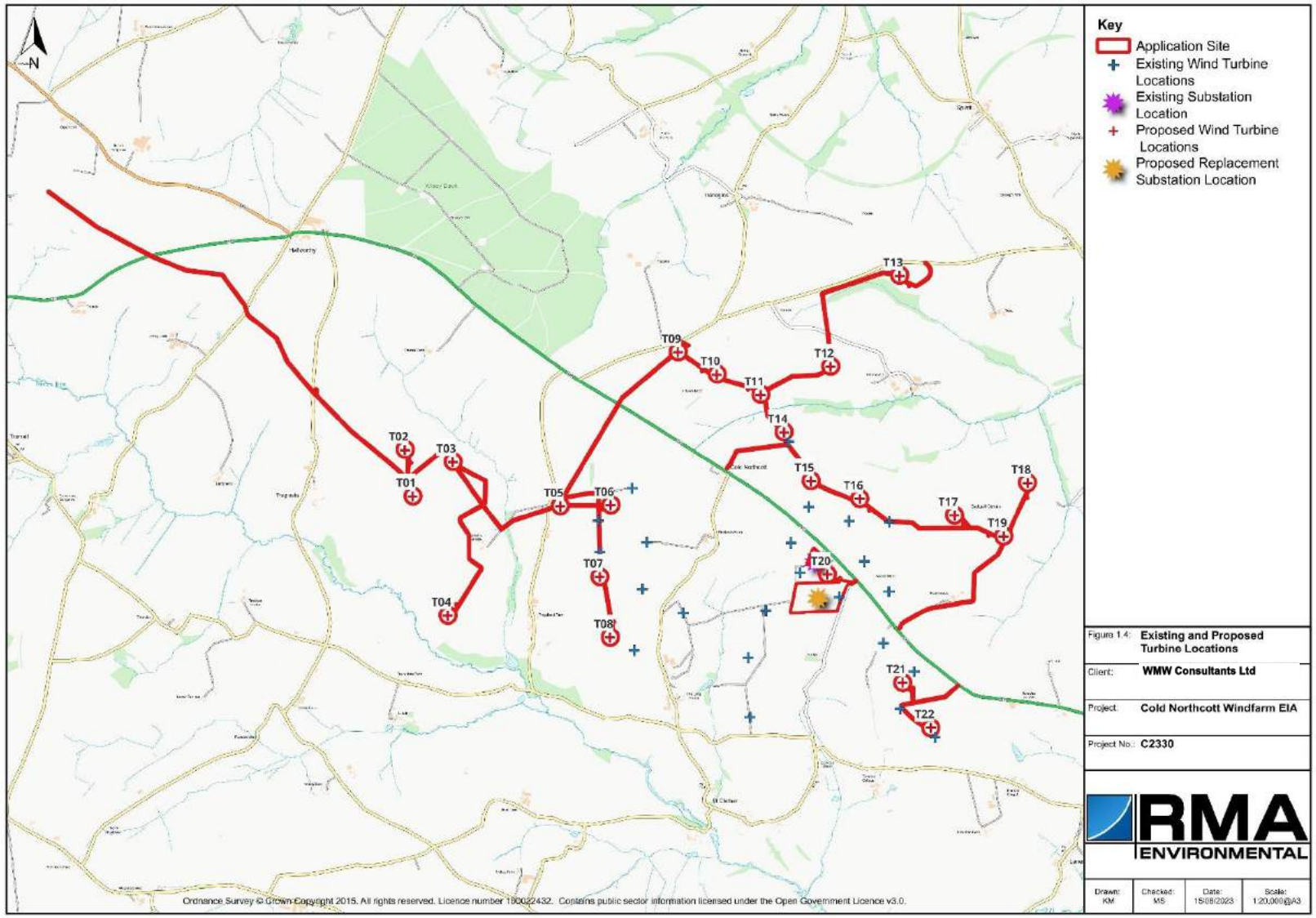

Figure 1: Site Location Plan and Proposed Wind Farm Location

2 THE PROPOSED DEVELOPMENT

The Application Site

2.1 A wind farm is already present on the site which is centred around National Grid Reference (NGR) **SX 19872 86450.** The proposed development site covers an area of approximately 29.7 hectares (ha).

2.2 The A395 runs through the centre of the site, dividing it into two sections; land to the north and south of the A395. Of the 22 proposed turbine locations, 11 turbines will be located to the north of the A395 and 11 will be located south of the A395 as shown in Figure 1. The application site comprises of land owned by various landowners encompassing a mixture of farm holdings, agricultural land, residential dwellings and private and public roads.

The Proposed Development

2.3 A 23-turbine wind farm is already present on site, which consists of horizontal axis two-bladed models, understood to be WEG MS3-300kW turbines with a 25 m tower and 33 m diameter rotor and an associated substation. A Section 73 Variation of Condition Application has been granted (PA19/02211) to replace the blades and hub on all the operational wind turbines, to be located in the exact same positions on the same towers. The replacement rotors would be of a 3-blade design (Vestas V27/V29).

2.4 The proposed development is to repower and replace the existing 23 turbine wind farm with up to 22 wind turbines with up to a 115 m tip at Cold Northcott Windfarm. Of the 22 proposed wind turbine locations, ten of these will be positioned in approximately the same location as an existing turbine and therefore this will be defined as a direct repowering. The remaining 12 proposed wind turbine locations have been positioned in alternative fields due to environmental constraints. The new positions ensure that there are no adverse impacts on the environment and therefore these locations are more favourable from an environmental perspective.

2.5 The candidate turbine for the repowered wind farm is the DIRECTWIND 61 – HH84 which have 61 m diameter rotor blades and 84 m hub height (i.e. up to 115 m to tip) (refer to Figure 2 below).

2.6 Currently, the substation that serves the two-bladed turbines is located in the south-east of the application site, just south of Napps Moor and north of T22 location. Given the age and the size of the existing substation, it is likely that this will be decommissioned and replaced with a new substation. The new substation location has yet to be determined but an indicative location is shown within Figure 1, just south of the current substation location. It is proposed that the new substation location will be determined and designed under a separate planning application.

2.7 An indicative cable route plan has been determined and this is included within Figure 3. This provides a joined-up approach with as minimal routing as possible. It is proposed that the detailed cable route plan will be controlled by a suitably worded planning condition, to allow for minor rerouting as may be necessary.

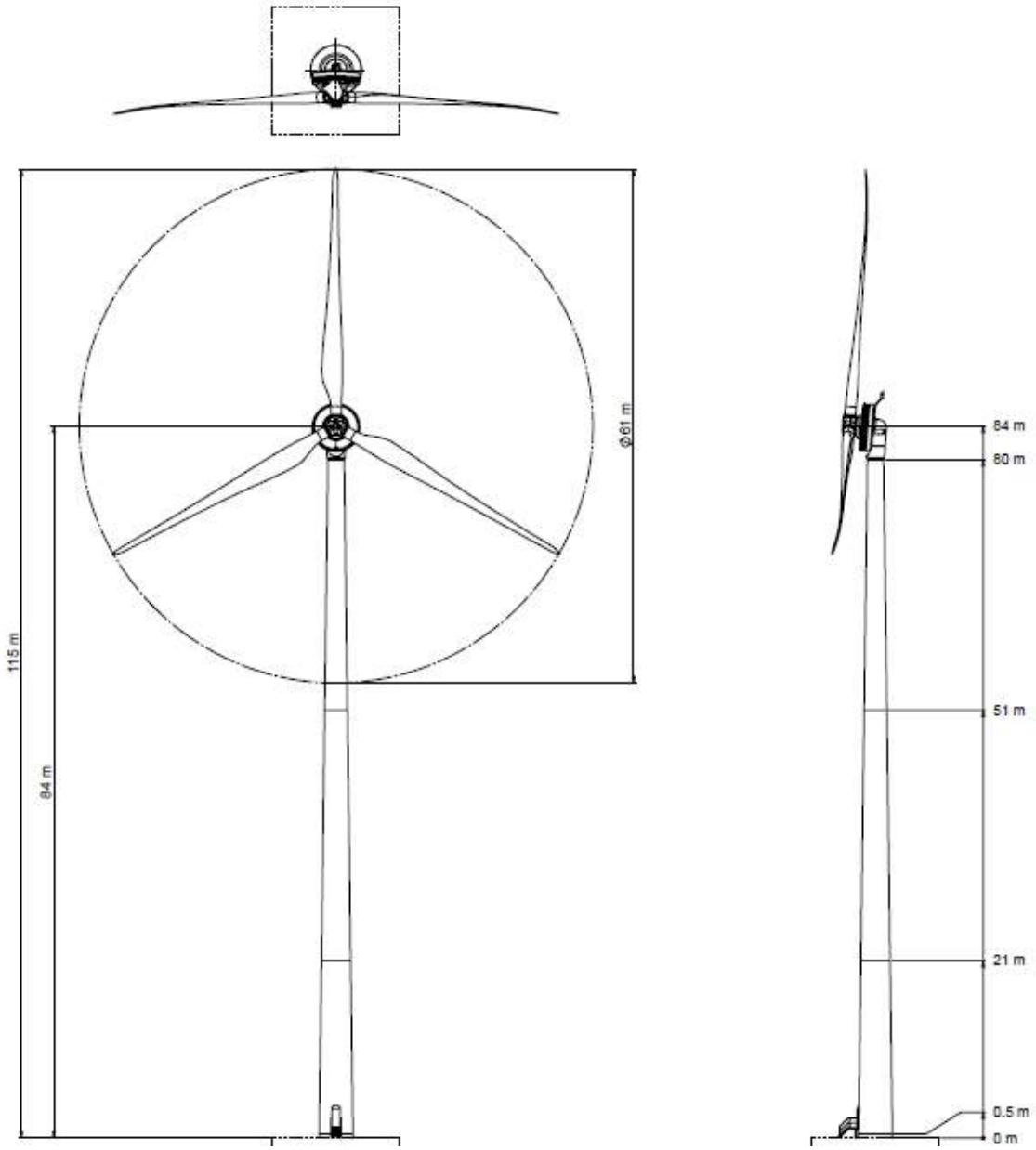

Figure 2: Plan of the Candidate EWT DIRECTWIND 61 – HH84

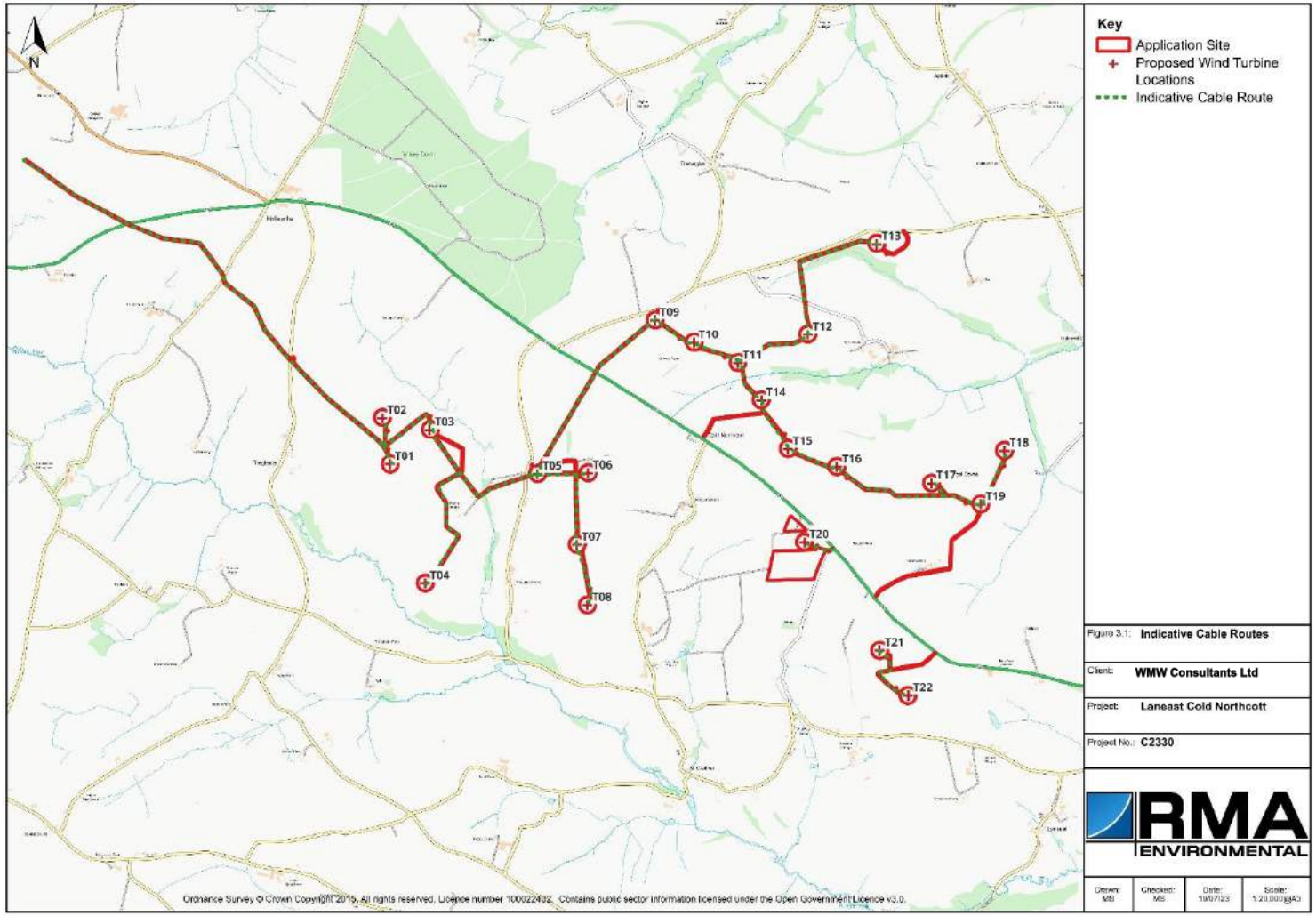

Figure 3: Indicative Cable Route Plan

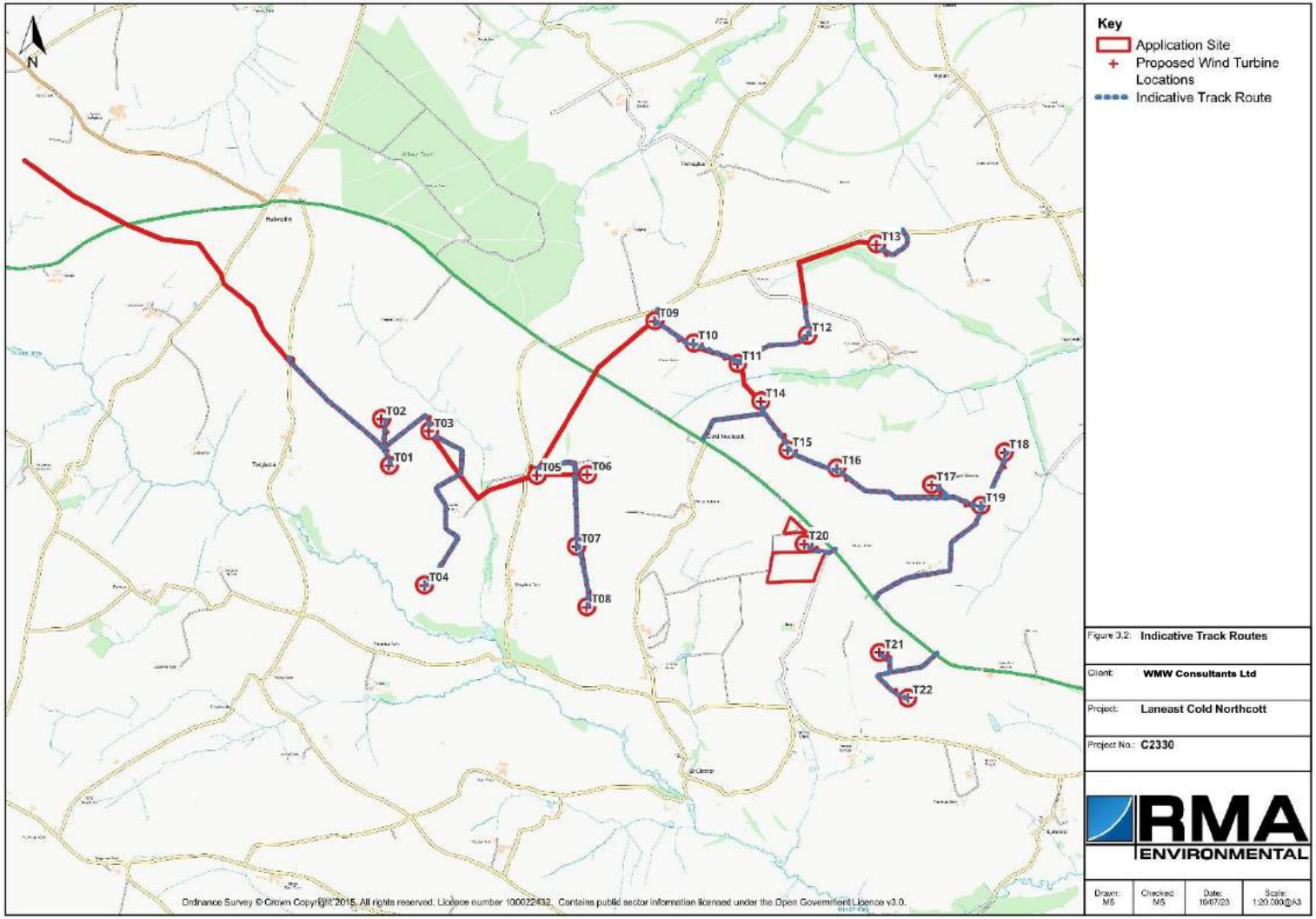

Figure 4: Indicative Track Route Plan

CLIMATE CHANGE

2.8 A Climate Change Statement has been prepared and is included as Appendix 3.1 of the ES. It assesses the likely significant impacts of the proposed development on the environment with regard to climate change.

2.9 The assessment has considered the impacts of the proposed wind farm on climate change through a conservative estimate of the predicted energy generation of the wind farm and conversion of this into the amount of CO_2 saved compared to the equivalent generation from non-renewable energy sources.

2.10 Wind power generation is not zero carbon as greenhouse gases are emitted during the installation, maintenance and decommissioning phase of the wind farm.

2.11 The carbon payback period is the time for the carbon emissions displaced by wind power to equal the life cycle carbon footprint of the wind farm. In order to achieve a net reduction in greenhouse gas (GHG) emissions, this should be significantly shorter than the intended lifetime of the wind farm. At current marginal displacement rates, carbon payback is typically around 6 months to a year.

2.12 The 22 turbine wind farm has a proposed operational lifetime of 35 years and, based on the above, it is considered that within 12 months the carbon emissions generated from the installation, manufacturing and decommissioning of the 22 turbine wind farm would be offset.

2.13 Repowering and replacement with a 22 turbine EWT DIRECTWIND 61 – HH84 wind farm will generate electricity at a peak of 22 MW, with each turbine generating up to 1 MW of energy. This is more than three times the peak output of the original consented site peak and four times greater than the existing consented peak. The proposed wind farm is conservatively modelled to produce a total of over 66,000 MWh per year which is equivalent to the electricity used by approximately 22,758 houses on the typical use OFGEN UK home (2,900 kWh per household) or 15,348 using the higher use OFGEN home (4,300 kWh per household).

2.14 Carbon emissions from non-renewable sources of energy are estimated to be 980 g CO_2 eq/kWh for coal and 465 g CO_2 eq/kWh for natural gas. This makes the carbon footprint of coal almost 90 times greater than that of wind energy and the carbon footprint of natural gas more than 40 times greater than wind energy. This confirms that shifting electricity production within Cornwall from non-renewable to renewable sources (such as wind farms) has a major beneficial impact on CO_2 emissions in the county.

Alternatives and Design Evolution

2.15 The ‘Do Nothing’ scenario refers to not developing the site for any expanded use and therefore leaving it in its current state. The current site is a wind farm with two-bladed turbines consented to be repowered with three-bladed turbines of similar generation capacity. The proposed larger scale repowering would increase the wind farm generation peak capacity by a factor of over 300%. The modelled yield would increase by approximately 500%.

2.16 The site has a high wind resource availability and low population density and is not a designated landscape, with a limited number of heritage assets nearby. It is therefore an optimal location for the proposed repowering.

2.17 As reported within the *'Review of the Cornish Renewable Energy Landscape Sensitivity Assessment'* prepared by LUC in December 2020, the existing site is classed as a 'bad' example of wind energy development in Cornwall. A 'Do nothing approach' would contribute significantly less towards Cornwall becoming carbon neutral by 2030 with discordant wind turbine designs. For this reason, this option has been considered the least optimal by the Applicant.

2.18 it is suggested within the *'Review of the Cornish Renewable Energy Landscape Sensitivity Assessment'* (LSA) that the existing site is repowered. The site is rare in Cornwall in that it has a substantial additional grid connection available to the Applicant (with an associated cost), there are very few sensitive receptors in the local area and the development would result in a substantial and significant increase in renewable energy generation without a net increase in the number of wind turbines.

2.19 The LSA recommends that the wind farm is repowered to a fewer number of three-bladed turbines. However, repowering the site with only a small number of new turbines would not be viable. Modest benefits in yield over the existing/consented capacity would be insufficient to offset the costs of the redevelopment, including the supporting infrastructure and grid connection.

2.20 The candidate wind turbine is considered to offer an optimal range of performance including renewable output capacity and proven reliability given the known constraints associated with the installation of large wind turbines.

2.21 There have been key design considerations and constraints which have guided the evolution of the proposed development, in particular with reference to the location of the turbines and in response to pre-application feedback through the consultation process and assessment surveys. The EIA team have worked alongside the design team to ensure that 'mitigation by design' principles have been incorporated into the evolving scheme and so the evolution of the design has included consideration of environmental effects and issues.

2.22 The key changes include the location of turbines especially in relation to their proximity to hedgerows to avoid impacts on bats as well as movement away from residential dwellings to ensure there are no adverse impacts in relation to noise. As well as this, certain turbine locations had to be avoided due to electromagnetic interference (EMI) and radar constraints. The specific impacts in relation to each technical environmental discipline have been considered in the individual Chapters of the ES. The layout of the turbines was also dependent on the landowners involved.

2.23 The existing wind farm presents a unique opportunity to develop a high yield renewable energy site without increasing the number of wind turbines. This is possible due to environmental advantages including both high wind speeds and relatively modest constraints (for example an existing large windfarm, low population density, a majority non-designated host landscape and few heritage assets in the vicinity).

2.24 It is also possible due to the fact that the Applicant has available a significant grid connection via a substation under his ownership, which is incredibly unusual in Cornwall. The combination of these environmental and practical advantages is a key consideration of the rare and special potential of this site for a larger scale repowered windfarm.

3 PLANNING POLICY AND FRAMEWORK

3.1 This chapter provides an overview of relevant legislation and planning policies for the proposed development at international, national, regional and local level. A more detailed review of (and response to) individual policy and guidance is contained within each technical assessment chapter of the ES.

3.2 International policy was initiated at the 'Earth Summit' in Rio de Janeiro in 1992 and since then the Kyoto Protocol and the Paris Agreement have been in force to mitigate climate change by reducing emissions of greenhouse gases.

3.3 The UK Government is committed to meeting extant targets for increasing the proportion of UK energy to be produced by renewable sources. Subject to advice from the Government's Climate Change Committee, current planning policy and the evidence base in support of renewable energy is to be maintained. National policy relevant to this proposal include the Climate Change Act (2008), National Energy Policy Statements (2011), National Planning Policy Framework (NPPF; September 2023 and Planning Practice Guidance (PPG) for Renewable and Low Carbon Energy (2015).

3.4 The Cornwall Council Local Plan was adopted in 2016 and sets out the policies and proposals to guide development and the use of land up to the year 2030. The individual policies within the Local Plan are detailed within the relevant chapters within the ES.

3.5 The adopted Climate Emergency Development Plan Document (DPD) sets out planning policies that will protect and shape the future of Cornwall by addressing climate change and expanding on Local Plan policies. The DPD refers to a policy map which identifies broad areas that may be suitable for wind energy based on a landscape sensitivity assessment. The mapping indicates that the area at Cold Northcott (character reference CA36, RU29 under the DPD) is identified as suitable for wind energy.

4 ASSESSMENT METHODOLOGY

4.1 The EIA has been carried out in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 and associated guidance set out in the former Department of the Environment, Transport and the Regions (DETR) Circular 02/99.

4.2 The principal objective of the EIA process is to provide the Local Planning Authority, statutory consultees and other interested parties with a clear and concise technical document that provides sufficient information on the proposed development and its likely environmental effects to assist in making a decision on whether planning permission should be granted.

4.3 The effects that are considered to be significant prior to mitigation are identified within the ES. The significance of these effects reflects judgement on the importance or sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes.

4.4 Environmental effects may be both adverse (negative) or beneficial (positive). Quantification of these effects, particularly in relation to comparative assessment between environmental disciplines, requires consistent assessment criteria to be used throughout.

4.5 It should be noted, however, that certain technical studies (e.g. landscape and ecology) have slightly different assessment criteria which meet current best practice guidance for that discipline. For the sake of clarity, the specific significance criteria used in each technical assessment are set out at the beginning of the respective technical chapters in the ES.

4.6 Statutory and non-statutory bodies have been consulted as part of this EIA, either through the EIA Scoping Opinion process and/or during the assessment stages of the EIA. All technical chapters include a summary of consultation undertaken to inform the corresponding assessment.

4.7 A consultation event was held with the public on 21st March 2023 where there were opportunities for attendees to ask questions and submit comment queries via a questionnaire. Given the small size of the local parish halls, the consultation was undertaken near to the site at the Otterham and St Juliot Village Hall. A public notice was issued in the local newspaper and the relevant adjoining parish councils were notified. A dedicated open access website was also published, along with a contact form for comments. A summary of the questions and comments and the actions and responses undertaken are included within the Planning Statement which is submitted as a separate report as part of this planning application.

4.8 The likely cumulative effects from other proposed or committed wind farm developments within a 10 km radius of the site, in combination with the proposed development, are also considered within each technical assessment chapter.

5 CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT

5.1 This subsection provides a summary of **Chapter 6: Construction and Environmental Management** of the ES.

5.2 This chapter of the EIA provides a preliminary Method Statement for the construction and environmental management of the proposed development, including details of the construction phase and decommissioning phase of the proposed wind turbines in an environmentally sensitive manner.

5.3 A detailed Construction Environmental Management Plan (CEMP) will be prepared and submitted to Cornwall Council during the detailed design stage of the application. An outline of the likely content of the CEMP is included in Chapter 6 of the ES.

5.4 It is assumed that the site preparation and construction programme would be complete within a 2-3 year period. Planning for the construction of the wind turbines is necessarily broad at this stage and may be subject to modification in later stages of development.

Outline of Construction Process

5.5 It is proposed that each wind turbine would be constructed on an area of land not exceeding 1 ha. The concrete bases would measure approximately 144 m^2 (for each turbine) and any disturbed land around the base of the turbine would be reinstated to its former quality for re-use in agricultural production (i.e. the surrounding land use prior to construction of the turbine) (refer to Figure 5 and Figure 6).

5.6 Given the age of the existing wind farm, it is proposed to upgrade the majority of the below ground cabling, where possible. An indicative cable route plan has been determined and this is included as Figure 3. This adopts a strategy of as minimal routing as possible and following the same route as the tracks, where possible. During construction, the cabling trench will be a maximum of 1 m wide. Any cable routing through hedgerows will be undertaken by directional drilling to avoid loss of habitat and a 10 m easement for biodiversity habitat loss has been considered for the construction of the proposed cable route within Chapter 9: Ecology and Nature Conservation. The cable trenches will be backfilled with excavated material to maintain the characteristics of the ground.

5.7 It is possible that construction could give rise to some ground compaction; however, it is considered that this would be no worse than other traditional farming practices which use similar heavy machinery.

Construction Traffic Management

5.8 Nine different routes have been assessed using three vehicle types required for the wind farm. The assessment concluded that most routes to the turbine locations will allow vehicle movements to track without issue; however, some routes required further investigation and mitigation. It is considered suitable for a planning condition to secure the details of the construction traffic management accordingly.

5.9 The components of the wind turbine would be delivered to site from Europe by Heavy Goods Vehicles (HGVs) namely articulated lorries with steering trailers, utilising the main highway network (via ferry service to cross the North Sea).

5.10 Figure 7 below shows the proposed construction traffic route to the site. Cornwall Council's Highway Authority would be advised of the actual number, dates and times of articulated lorry movements involved in the delivery of the turbine's component parts, once a programme has been devised following planning consent. As far as possible, care would be taken to avoid school opening and closing times, peak commuting times and holiday periods.

5.11 The installation of each wind turbine will result in approximately 10-12 HGV movements, including support vehicles for the cranes to each proposed wind turbine location. Due to the significant constraints on wind turbine availability, construction will be phased and therefore the deliveries will be staggered.

Environmental Management

5.12 Potential environmental impacts during the construction phase are largely dependent on attention to management controls (e.g. watering to control dust, etc.) and best practice techniques will be implemented and adhered to closely by the construction contractor.

5.13 Any complaints would be logged and reported to Cornwall Council as soon as practicable. The Method Statement procedures will identify the roles and responsibilities of key staff in the Construction Team and relevant local authority personnel, in respect of breaches or complaints from the public.

5.14 The Project Manager will ensure that all staff engaged on site are continually made aware of the need to control environmental effects. The Principal Contractors will be required to work in accordance with best practice and ensure that an appropriate CEMP (or similar) is prepared and implemented on site. This will outline measures to avoid pollution incidents and emergency action procedures to be taken, if necessary.

5.15 There will be minimal waste removal from site as most of the spoil that will be excavated for the turbine bases will be re-used elsewhere on site as far as practicable to minimise construction waste. Any waste or other materials that require removal from the site will be notified by the Construction Contractor for approval (via consultation with the Authorities) and will only be deposited at authorised waste treatment or disposal sites.

5.16 Where significant construction impacts have been identified, these are addressed within the individual technical chapters of the ES (Volume 1). There is potential for environmental impacts to occur during day to day construction operations or from individual instances of mal-operation or accident, for example. Therefore, prior to construction, a number of procedures for construction and environmental management would be agreed with Cornwall Council.

Figure 5: Example of Turbine Concrete Base Preparation

Figure 6: Use of Telescopic Crane to assemble Turbine

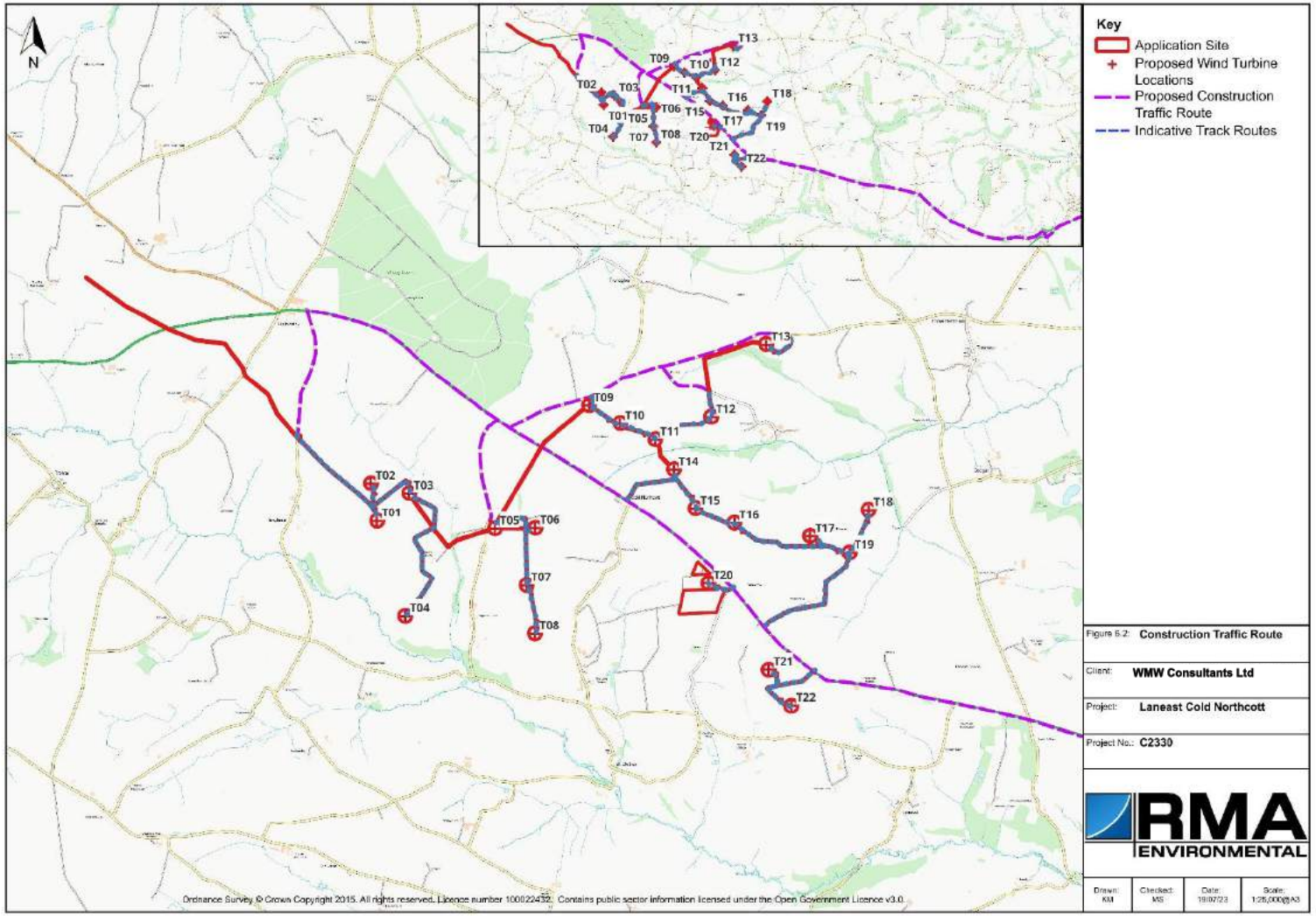

Figure 7: Construction Traffic Route

6 ARCHAEOLOGY AND CULTURAL HERITAGE

6.1 A full assessment of the archaeology and cultural heritage of the site and surrounding area is provided within **Chapter 7: Archaeology and Cultural Heritage** of the ES.

6.2 The assessment defines a 1 km study area measured from the boundaries of the site (which was used to inform the assessment of archaeological potential) and a 15 km study area measured from the boundaries of the site (for the assessment of possible impacts on the setting of designated heritage assets).

6.3 There are four Grade II Listed Buildings located within the wider site area. The site does not include or extend within any other types of designated assets such as World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens, Battlefields or Conservation Areas.

6.4 The Cornwall Historic Environment Record (CHER) records several known and potential remains within the site which relate to the prehistoric, medieval and post-medieval periods. These remains are mostly comprised of findspots, a now destroyed barrow and potential field systems, quarries and other agricultural features. The geophysical survey undertaken to the turbine locations (Sumo 2022) did not detect any anomalies of definite archaeological interest with the linear and curvilinear trends in the data having an uncertain origin (i.e. they could be archaeological or agricultural).

6.5 The Historic Landscape Characterisation for the study area categorises the site as comprising areas of Farmland Medieval, Modern Enclosed Land, Upland Rough Ground and Post-Medieval Enclosed Land. These categories reflect the character of the land but also the estimated period of field formation. They are quite common within the area and are not considered to be of heritage significance in and of themselves.

6.6 There will be no residual effects on the designated heritage assets given that no impacts or effects are identified through the construction phase of the proposed scheme.

6.7 The sensitivity of the designated heritage assets is considered to range from high to low. The magnitude of change through the operation of the proposed scheme is considered to be small/negligible. Therefore, there is likely to be an indirect, permanent, long-term, adverse residual effect which is considered to be **Minor**.

6.8 The sensitivity of potentially hitherto unidentified archaeological remains within the site is considered to be low. The magnitude of change, following mitigation, comprising a programme of archaeological investigation and recording implemented pre-construction as a condition of planning permission, is considered to be negligible. Therefore, there is likely to be a direct, permanent, long-term, adverse residual effect on archaeological remains within the site, which is considered to be **Negligible** during both the construction and operational phases.

7 AVIATION

7.1 This subsection provides a summary of **Chapter 8: Aviation** of the ES. A Telecommunications Statement is included as Appendix 8.1 of the ES.

7.2 The proposed development is located within quite a complex aviation environment with overlapping radar coverage from civil and military facilities and with significant areas of military operation and Danger Areas to be considered. The site is located within Class G, the least regulated airspace; the closest regulated airspace is Class A controlled airspace above that and to the east of the site within the Berry Head Control Area. The nearest civil radar equipped airport is at Newquay Cornwall Airport.

7.3 Overlapping military danger areas are located to the west of the site. Additional military danger areas are located to the south which are associated with military activity in the English Channel. Beyond Newquay, to the south-west, the Culdrose Area of Intense Aerial Activity (AIAA) is located.

7.4 Interspersed around the south-west area are unlicensed airfields at Davidstow, Truro, Perranporth, Bodmin, Sheepwash and St Merryn.

7.5 There are no licensed radar equipped aerodromes within 30 km. There are no licensed non-radar equipped aerodromes within 17 km. There is a private airstrip at North Tregeare Farm approximately 1.5 km north-east of the nearest turbine within the proposed development. Davidstow Moor unlicensed aerodrome is just outside the 3 km distance from the closest of the turbines within the proposed development.

7.6 The military ATC radar at Royal Naval Air Station Culdrose is 82 km to the south-west, adjacent to the town of Helston. The UK maintains an Air Defence Radar (ADR) covering the whole of UK airspace, the closest ADR to the proposed development is located at Portreath, 66 km to the south-west.

7.7 Aviation consultation has been undertaken as part of this assessment with the Ministry of Defence (MoD), NATS Safeguarding and Newquay Cornwall Airport as set out in Chapter 8 of the ES.

7.8 The assessment identified that the use of cranes and vertical obstruction to flights during the construction phase of the development would be **Negligible** and compliance with notification procedures for this equipment will be undertaken.

7.9 There are four potential effects which could result from the proposed development during operation. These include interference with the NERL infrastructure, Wembury radar, military low flying and North Tregeare Farm private airstrip. Mitigation measures include application of radar services compliant with operations in the area and providing specific lighting in accordance with MoD Policy and requirement.

7.10 On the above basis, there is considered to be a **Negligible** residual effect during both operation and construction of repowering the wind farm on electromagnetic interference and aviation.

8 ECOLOGY AND NATURE CONSERVATION

8.1 A full assessment on Ecology and Nature Conservation is within **Chapter 9: Ecology and Nature Conservation** of the ES.

8.2 In order to establish the baseline of the survey area, a desk study review of the Environmental Records Centre for Cornwall has been undertaken as well as an Extended Phase 1 Habitat survey and UK Habitat Classification Survey undertaken by HT Ecology between 9th March and 9th April 2020 (updated in December 2022) which identified the main habitat types within the survey area and the potential presence of protected and notable species. Further Phase 2 ecology surveys were subsequently undertaken.

8.3 The majority of habitats within the survey area comprise of large improved grassland fields surrounded by 'Cornish' hedges. Species-poor marshy grassland was frequent within waterlogged parts of the improved grassland field. Several arable fields were located within the survey area. These typically contained small field margins with limited plant species diversity.

8.4 The construction of the wind turbine bases will result in the loss of a relatively small area of grassland and/or arable habitat. The proposed cabling route would use existing gateways or be directionally drilled beneath the hedgerows and streams and no hedgerow removal or stream redirection would therefore be necessary. It will, however, require up to a 10 m wide easement with a 1 m wide trench dug in the centre of the easement. This would lead to the temporary loss of grassland and/or arable habitat.

8.5 The construction area would be delineated with temporary fencing prior to the start of construction. This would ensure that all habitats including designated sites outside of the construction area would be protected.

8.6 Construction would be undertaken in accordance with BS 5837 'Trees in relation to construction'. Compounds and storage areas sited away from hedgerows and retained grassland. Construction would also be undertaken in accordance with current government guidelines on pollution prevention.

8.7 Due to the small area of suitable reptile habitat requiring removal, the proposed mitigation strategy is based on 'habitat manipulation'. This would allow and encourage reptiles to disperse from the construction area into the adjacent habitats.

8.8 A pre-start survey would be undertaken to confirm that no badger setts were present within 20 m of the construction area. If setts are present and affected by the works, then a Natural England Badger Licence would be obtained prior to construction commencing.

8.9 Twenty-five heavy duty dormouse nesting boxes would be placed within the site prior to the start of construction.

8.10 A Biodiversity Net Gain (BNG) site has been identified approximately 3.2 km to the north of the site. An off-site area of approximately 7.16 ha was chosen instead of enhancing habitats on-site as a precaution to avoid encouraging bats and birds to a site close to proposed wind turbines.

8.11 Turbine installation would have a long-term, Adverse effect at the Sub-Parish scale (not significant). This would be compensated by the proposed habitat enhancement and creation within the proposed off-site BNG site. Creation of these habitats would offset the construction phase effects and result in a Beneficial effect which is significant at the Parish scale in the medium-term onwards once the habitats become established. The Biodiversity Metric 3.1 (DEFRA, 2022) calculates that the habitat enhancement site would result in an additional 26.09 Habitat Units overall which amounts to a 565% gain.

8.12 The new wind turbines are predicted to result in fewer bird and bat collisions than the existing wind turbines. The proposed development would protect, maintain and enhance biodiversity in accordance with policies concerning the conservation of biodiversity in the National Planning Policy Framework (2023) and with Policies 22, 23 and 25 of the Cornwall Local Plan 2010-2030 (Adopted 2016).

8.13 Overall, there is considered to be some **adverse impacts** associated with the minor habitat loss and displacement of species during the construction phase; however, this is outweighed by the overall **long-term beneficial impacts** associated with the reduction in bat collisions and incorporation of the biodiversity enhancement site.

9 SOCIO-ECONOMICS AND HEALTH

9.1 A full assessment on Socio-Economics and Health is within **Chapter 10: Socio-Economics and Health** of the ES.

9.2 This Chapter has considered and assessed a variety of topics including employment, economic activity, human health, community engagement, decommissioning, travel and recreation and local power generation.

9.3 The assessment identified that during construction, 45FTE 'person year' job opportunities will be generated for local people, resulting in a temporary Moderate Beneficial residual impact.

9.4 During construction, an additional £4.21 million will be bought to the local economy, resulting in a **Minor Beneficial** residual impact.

9.5 The implications of the construction process on human health is considered to be **Minor Adverse** in the short-term.

9.6 The implications of the construction process on community engagement is considered to be **Negligible to Minor Beneficial**. The implications of the construction process on travel and recreation are considered to be **Minor Adverse** in the short-term.

9.7 During operation, there will be **Negligible to Minor Beneficial** residual impacts through the limited addition of employment and local power generation.

9.8 During operation, there will be **Negligible** residual impacts through the limited addition of local spend or health implications.

9.9 The decommissioning strategy will have a **Moderate Beneficial impact** due to the repurposing and redistributions of the turbines and their raw materials.

9.10 It can therefore be concluded that for Socio-Economic impacts, the proposed development will have an overall **Minor Adverse to Minor Beneficial Impact in the short-term** during construction and a **Negligible to Moderate Beneficial Impact** through its operation and decommissioning.

10 LANDSCAPE AND VISUAL IMPACT

10.1 This subsection provides a summary of **Chapter 11: Landscape and Visual Impact** of the ES.

10.2 Part of the site falls within the North Petherwin to St Clether Area of Great Landscape Value (AGLV). There are 13 public rights of way (PRoW) within and adjacent to the site boundary. Approximately 10% of the study area is Open Access Land, most of which is within Bodmin Moor.

10.3 The site is located within two National Character Areas (NCA) divided by the A395: NCA 149 The Culm (to the north-east), and NCA 152 Cornish Killas (to the south-west). The Cornish and Isles of Scilly Landscape Character Study provides a landscape character assessment across the study areas. The site falls within CA36 Delabole Plateau, CA31 Upper Tamar and Ottery Valleys, and CA26 East Cornwall and Tamar Moorland Fringes. The site falls within 1.5 km of the Cornwall Area of Outstanding Natural Beauty (AONB) (refer to Figure 8 below).

10.4 A computer generated zone of theoretical visibility (ZTV) illustrating the theoretical (or worst case) visibility of the turbine hub and blades has been prepared. The main receptor groups have been identified and are represented by Photoviewpoints (PVPs). Based on fieldwork observations and the findings of the data trawl, these PVPs have been selected to represent the variety of views available from public vantage points towards the site (refer to Figure 9 below).

10.5 During construction, the main landscape and visual impact would result from the formation and operation of a construction compound and site office (though this is unlikely to be required), material storage and vehicle and machinery movement. Construction activities would be conducted in line with a detailed Construction Management Plan (CMP) with works undertaken during specified time periods and conditions as appropriate. Lighting would be required as part of the construction. It is envisaged that due to the nature of wind farm development, construction effects would not exceed the magnitude of change experienced by receptors compared to operational effects and would be short-term in nature. Proposed turbines would be erected sequentially and the operational phase of the development where all turbines are erected would convey the greatest level of effects.

10.6 The likely significant effect to landscape during the operational phase of the wind farm is considered to be on the site character, NCA The Culm and Bodmin Moor and five of the eight LCAs the site is located within or within close proximity to. There is also considered to be a significant effect on the AONB. It should be noted that ‘significant’ does not imply unacceptable and the Climate Emergency DPD the Renewable Energy Landscape Sensitivity Assessment for Cornwall (2020) states that there is capacity for the repowering of the wind farm at Cold Northcott.

10.7 An assessment on the PVPs has identified that, during the operational phase, there will be visual impacts associated with a number of the viewpoint locations. As well as this visual

impacts will be associated with the Inny Valleys Walk and National Cycle Route 3 and six local minor roads within the site boundary.

10.8 There will mostly be no significant impact on road users within a 2 km radius of the site, other than those road users to the north, using a minor road that runs north-east from Higher Scarsick along a ridgeline. Those users are likely to experience the greatest change in views as a result of the proposed development. Users of the roads that connect between Three Hammers and the A395 to the east would also experience a change in views. To the south and south-west of the site, between the Davidstow and Laneast, minor roads fall within the Inny valley. Users of these routes would experience limited change where the routes pass through the lowest, wooded valley bottoms, with views of the proposed development increasing as routes climb out of the valley along the valley slopes (refer to Figure 10 and 11 below).

10.9 An assessment of the visual impacts associated with settlements within 1 to 10 km of the nearest proposed turbine confirms that of the 37 settlements considered, 16 settlements incurred significant visual effects as a result of the proposed development. They include Tremail, Trewassa and Hallworthy (north-west of the site); Warbstow Cross, Canworthy Water, Splatt and Tresemerto (to the north east; and Tresparrett to the north west, Tremain, Bagdall, Laneast, Petherwin Gate and North Petherwin to the east; Trewen, Bowden and Fivelances to the south; and Davidstow to the west.

10.10 A separate Residential Visual Amenity Assessment (RVAA) has been undertaken to identify and assess views of the proposed Cold Northcott Wind Farm from private residential properties within 1 km of the nearest proposed turbine. 35 individual or groups of residential properties were identified and assessed and the RVAA concluded that none of the properties or groups of properties would be unacceptably affected (to the extent that the proposed turbines would have an overbearing effect or otherwise affect the living standards to such a degree that they would be so dominant that it would become an unattractive place to live) (refer to Figure 12).

10.11 Primary mitigation measures, relating to the location of the turbines and access tracks were incorporated into the design of the development. The layout of the scheme has been designed to use, where possible, the existing access tracks. The proposed turbines are laid out so that they appear evenly spaced and balanced in views from the surrounding landscape. The turbines will be a pale grey to reduce the impact on close views and will appear pale against the sky and give a clean sculptural appearance. A semi-matt finish will assist in reducing the reflectivity of the turbines. The turbines have also been designed to ensure the rotor diameter is modest relative to the height of the hub. This helps to reduce potential landscape and visual impacts, is sympathetic to the scale of surrounding wind development and ensures maximum potential in energy production for the height of the hub.

10.12 Micrositing is necessary to allow for minor changes in site layout at the construction stage to minimise environmental impacts. Changing the locations of the wind turbines may affect certain views. Since the layout is not based on linear or grid layouts, micrositing distances of up to 30 m are unlikely to result in a material change in the appearance of the wind farm in the landscape and in views. Residents with potential views of the wind farm are greater than 750 m from the nearest turbine. Therefore, assuming maximum micrositing distances of 30 m, the worst case situation could result in properties being 30 m closer to any one

turbine. It is recommended that the micrositing avoids moving turbines on the south western portion of the site any nearer to the closest non-involved properties of College Farm and Toseland Hall.

10.13 The proposed development alongside other consented wind energy development within the surrounding area has been assessed to identify the extent and significance of the cumulative effects on the landscape and visual resource.

10.14 In summary, the cumulative assessment finds that the addition of the proposed development to the cumulative schemes mostly results in a level of effect no greater than that identified within this landscape and visual assessment, due to the proposed development forming the main proponent. In this respect, all of the cumulative schemes under consideration are either single or twin turbines with blade tip heights of less than 45.6m.

10.15 The only exception to this is for two consented turbines at Higher Penhale which would be visible as notable foreground features, appearing larger in scale than the proposed development and mast, hub and blades visible above the horizon line. The presence of the existing turbines provides a sense of a landscape in which turbines are a prominent addition, which is exacerbated by the presence of the proposed development, which in it's own right results in a high magnitude of change.

10.16 Key routes through the landscape have been assessed to examine sequential effects resulting from the presence of more than one wind farm in the landscape. It is important to note that the majority of significant effects identified within the cumulative land visual assessment relate specifically to the proposed development, and do not therefore, in reality, result in 'additional' significant effects above and beyond those identified for the scheme in isolation. This is due to the proposed development forming the main proponent of many views, even when viewed in close range to other cumulative schemes.

10.17 Whilst there are some significant adverse effects identified at both the construction and operational phases, they are primarily landscape and visual impacts that, in many cases are inevitable, by virtue of the size and scale of the proposed development. This must be viewed in the context of the established baseline, which is already influenced by a mix of operational and consented two and three bladed wind turbines, where the proposed development is set to repower 23 twin bladed turbines with 22 three bladed turbines. This will not increase the quantum of built form however the vertical scale will increase.

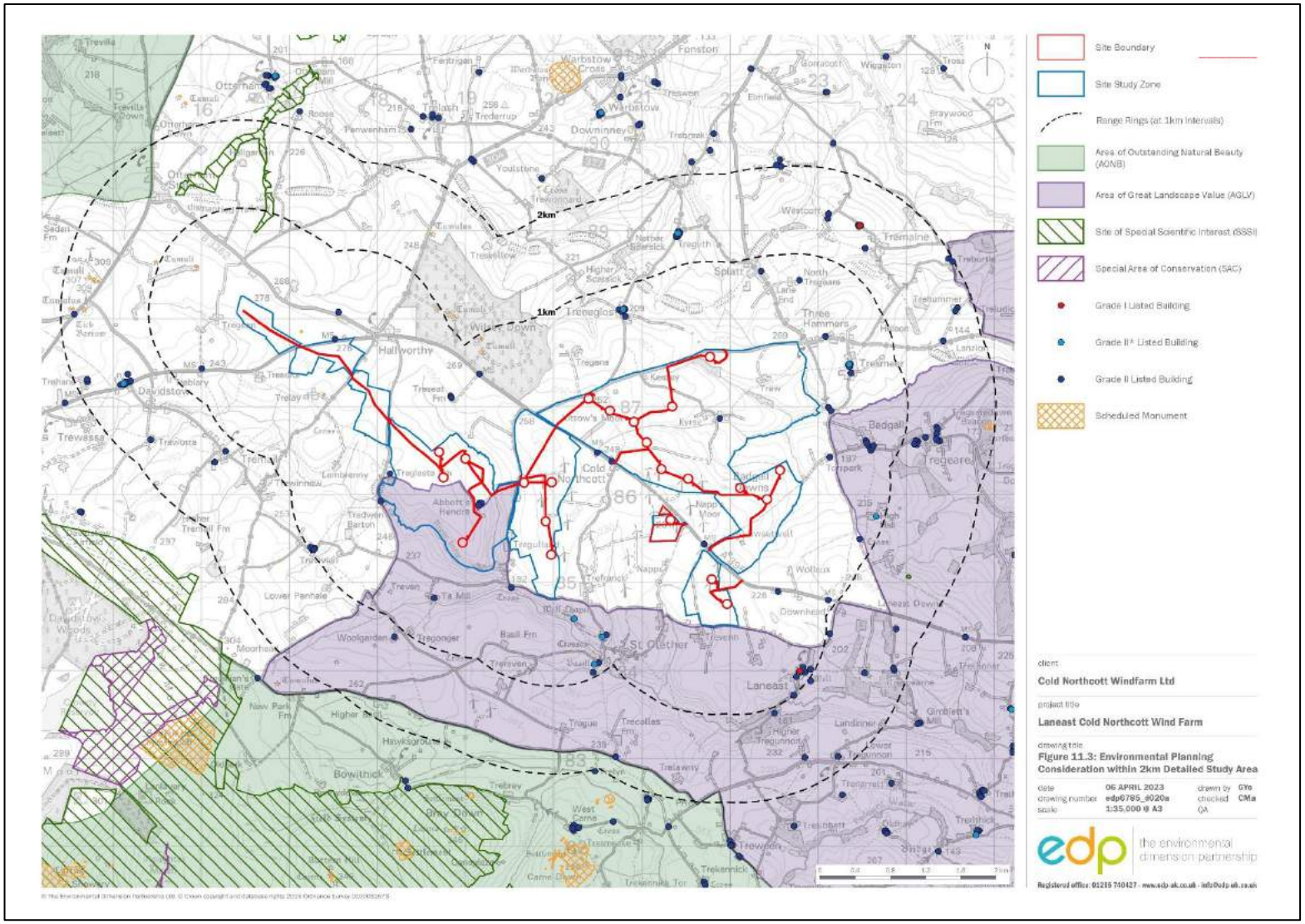

Figure 8: Environmental Planning Considerations within 2km radius

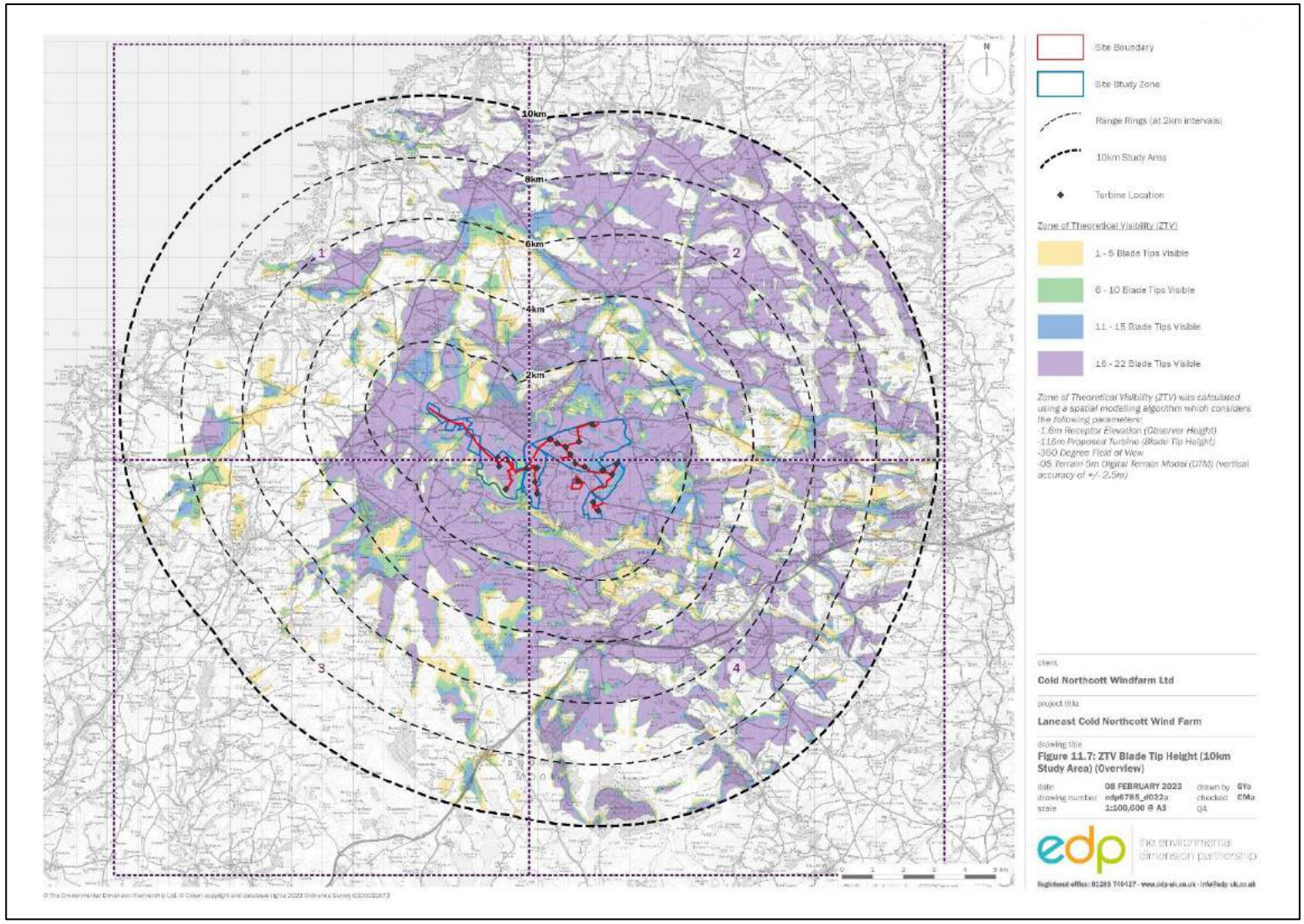

Figure 9: ZTV Blade Tip Height 10 km radius

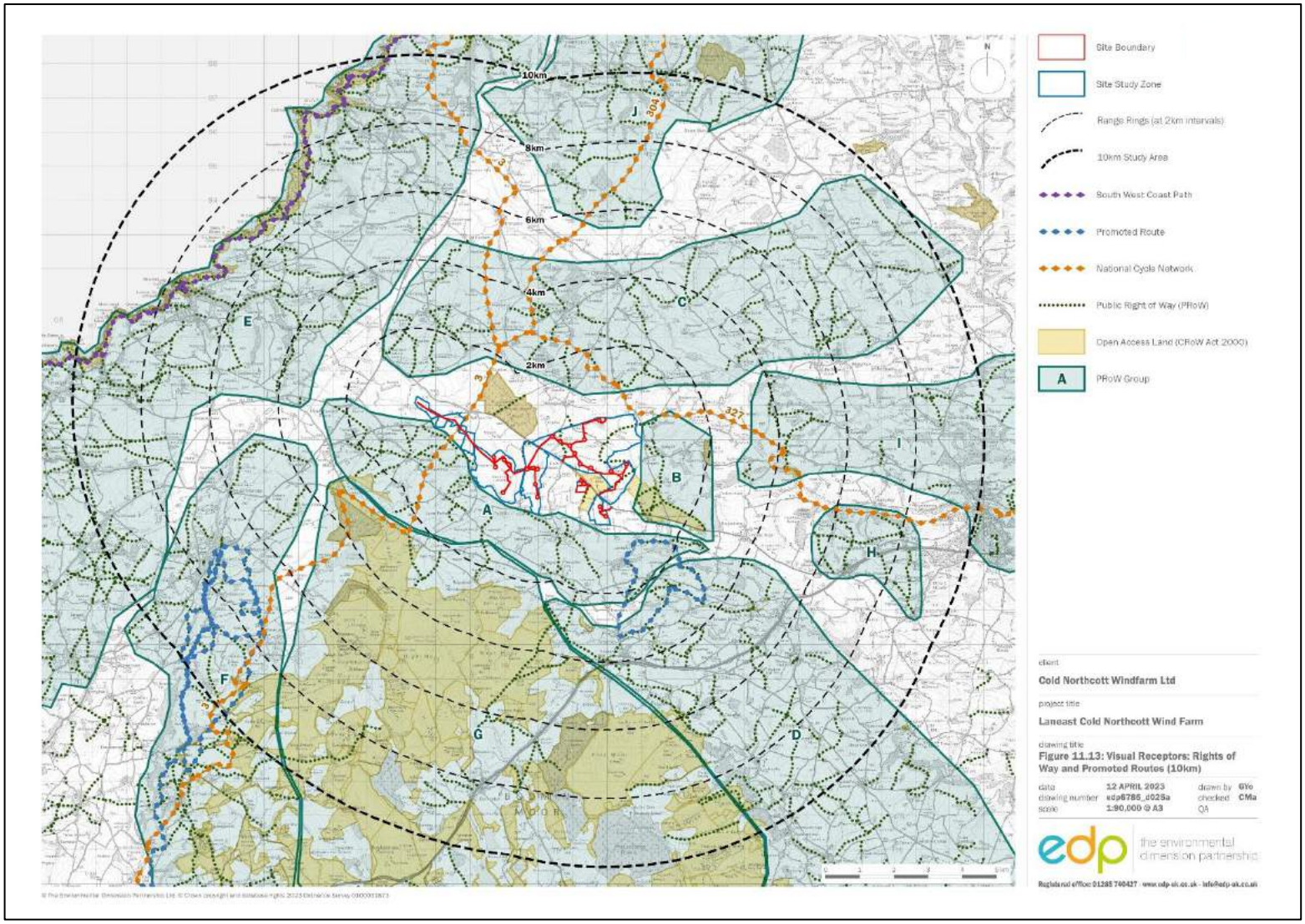

Figure 10: Visual Receptors within 10 km

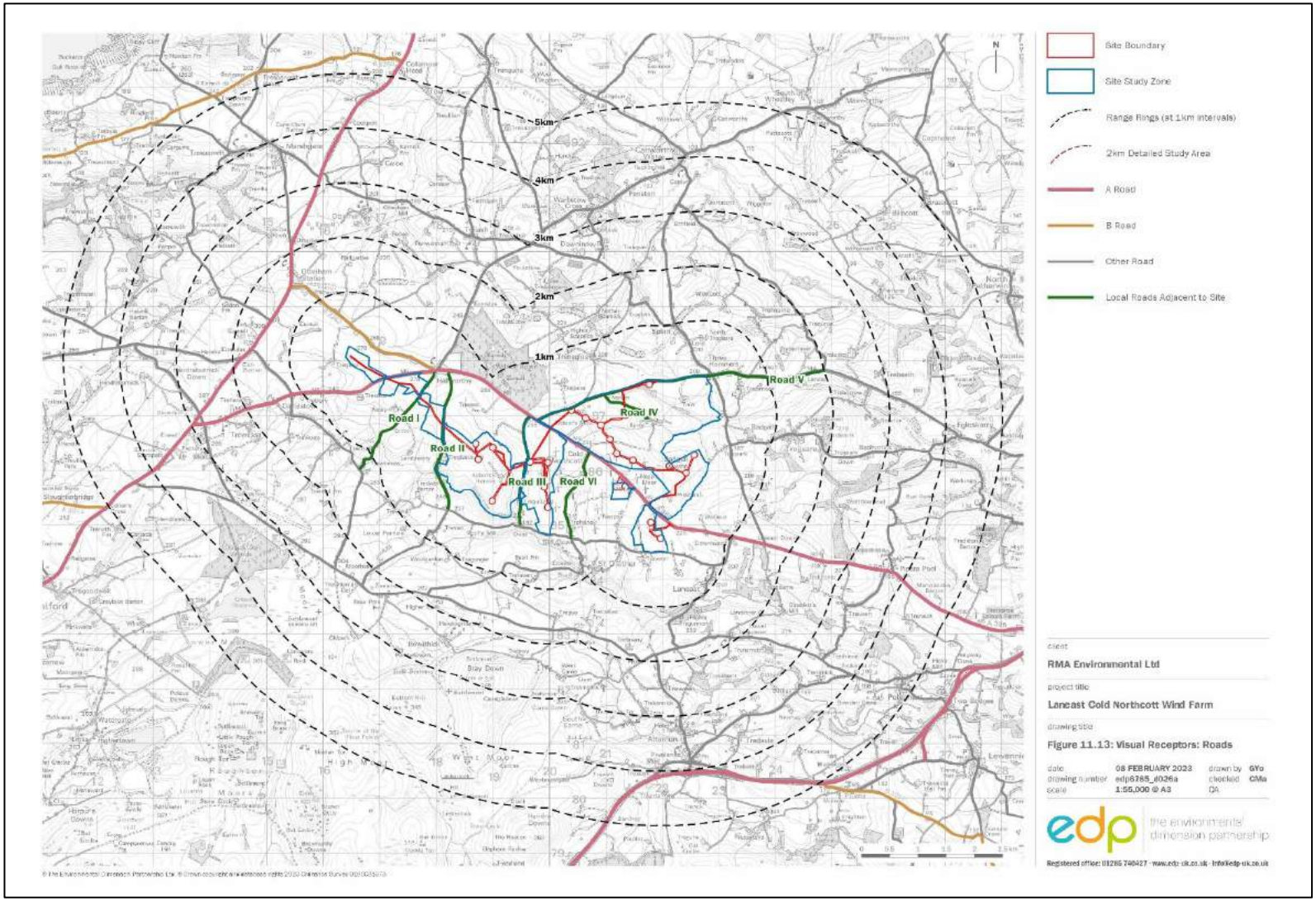

Figure 11: Visual Receptors: Roads

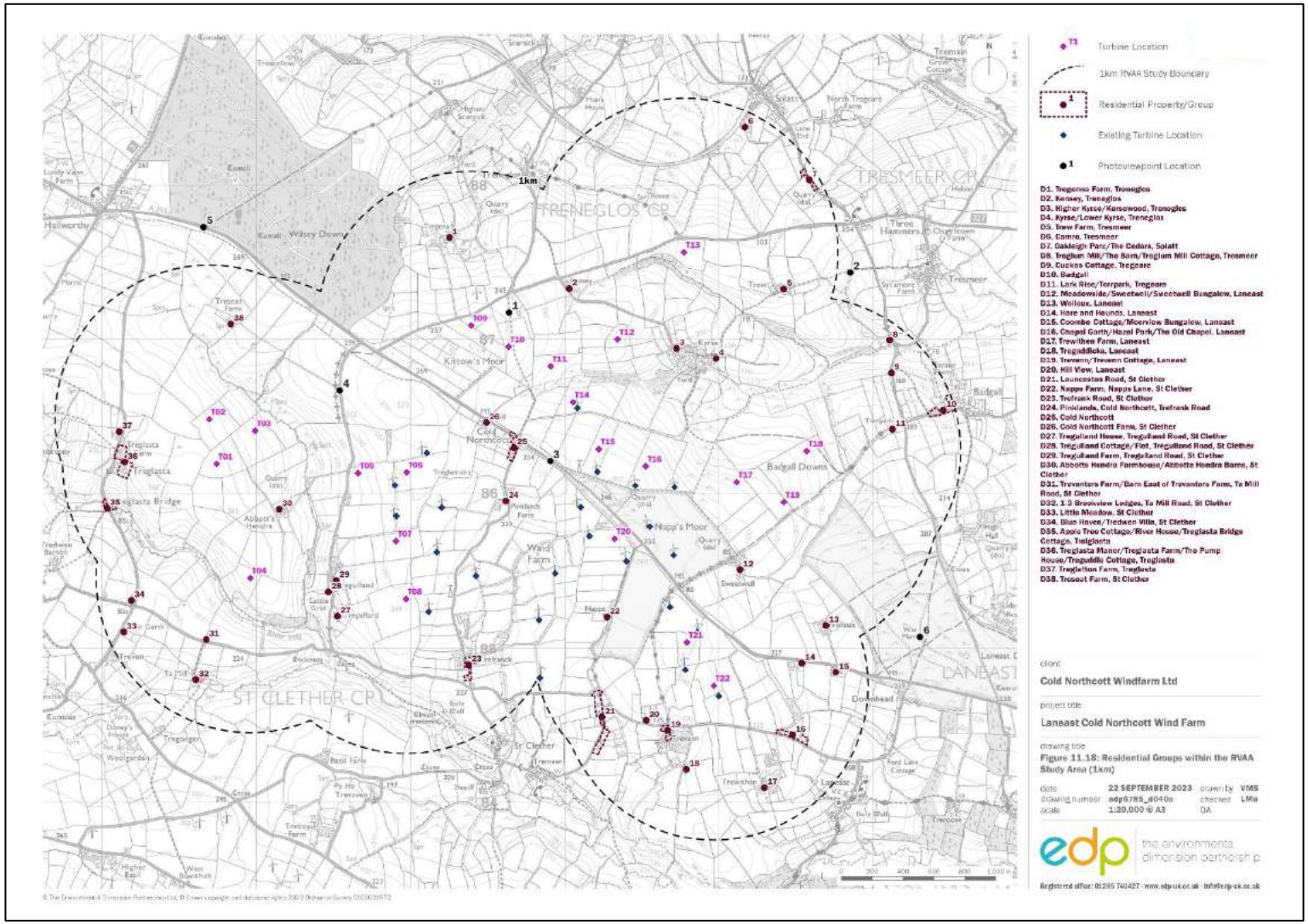

Figure 12: Residential Groups within the RVAA Study Area

11 NOISE AND VIBRATION

11.1 A full assessment on Noise and Vibration is within **Chapter 12: Noise and Vibration** of the ES.

11.2 Noise will arise during the construction period from the excavation of the turbine foundations and trenches for cables, the construction of new access tracks, hardstandings and from the erection of the turbines. Most of these activities will occur within the wind farm site area relatively far from residential properties. A modest and temporary increase in traffic noise on local roads will occur from construction vehicles for the delivery of the turbine components and construction materials.

11.3 Since construction will generally occur during daytime working hours and is a temporary effect, a construction noise assessment has been scoped out of this assessment. A Construction Environmental Management Plan (CEMP) will be prepared to set out how construction effects can be managed. This will include best practical means measures to control construction noise.

11.4 A noise assessment has been carried out for the proposed replacement and repowering of Cold Northcott Windfarm. This results in lower noise limits than those set for the existing turbines on site. The night-time limit will apply in respect of night-time noise levels although it is not proposed to increase turbine noise levels at night. It is necessary to run certain turbines at reduced power to meet the noise limits. The mitigation applies at all wind directions for wind speeds up to 8 m/s at 10 m height.

11.5 Turbine T01, T02, T03, T04, T05, T07, T08, T18, T20, T21, T22 should operate at Level 3 mode for all wind directions day and night to achieve compliance with the noise limits.

11.6 In addition, to reduce noise levels at Abbott's Hendra, Turbine T05 would be switched off during the daytime only for wind speeds between 4.5 m/s and 6.5 m/s at 10 m height.

11.7 To reduce noise levels at Tregulland Farm, T07 would be turned off during the daytime only for wind speeds between 4.5 to 7.5 m/s at 10 m height and T08 would be turned off for wind speeds between 5.5 and 7.5 m/s at 10 m height.

11.8 To reduce noise levels at Pinklands, Turbine T06 must run in Level 3 mode for wind speeds between 5.5 and 6.5 m/s at 10 m height during the daytime only and Turbines T14 and T15 must run in Level 2 mode for wind speeds between 5.5 and 6.5 m/s during the daytime.

11.9 To reduce noise levels at Napps, T20 would be turned off for downwind conditions during the daytime only 285° to 165° (that is wind directions greater than 285° or less than 165°).

11.10 To reduce noise levels at night at Craigmoor Cottage and other locations in Cold Northcott, Turbines T09, T10, T11 and T14 must be reduced to the Level 2 setting at night only (23.00 to 07.00). This again applies to all wind directions.

11.11 An additional assessment has been carried out considering the other operational wind turbine developments in the area. The majority of cumulative noise levels in the surrounding area are also less than 35 dB LA_{90}.

11.12 The proposed replacing and repowering of Laneast wind farm therefore complies with Cornwall and UK Government advice on noise and there should be no reason to refuse this scheme on grounds of noise.

11.13 The overall residual impact during the construction phase on noise is considered to be **Negligible** and the residual impact during the operational phase on noise is **Minor Adverse.**

12 SHADOW FLICKER

12.1 This chapter of the ES assesses the potential for the proposed development to cause shadow flicker impacts on local residents. A full assessment on Shadow Flicker is within **Chapter 13: Shadow Flicker** of the ES.

12.2 As described by DECC, shadow flicker '...*is the flickering effect caused when rotating wind turbine blades periodically cast shadows through constrained openings such as the windows of neighbouring properties'*.

12.3 Shadow flicker impacts would not occur until the proposed development had been erected and was fully operational.

12.4 Five of the 22 turbine shadow flicker zones will not impact residential properties (refer to Figure 13). Properties located at Kensey, Kyrse, Sweetwell, Trevenn and Trew Farm are financially involved in the scheme; however, as detailed above, the remaining properties could theoretically become affected by shadow flicker and are not financially involved.

12.5 There is the potential impact of photosensitive epilepsy as a result of shadow flicker from the wind turbines. Photosensitive epilepsy is a type of epilepsy in which all (or almost all) seizures are triggered by flashing or flickering light (either natural or artificial). However, people with this condition tend to be sensitive to flickering light between 3 - 60 Hertz (Hz)[1]. The frequencies of shadow flicker caused by modern wind turbines (less than 1.5 Hz)[2] are well below the threshold frequencies known to trigger photosensitive epilepsy.

12.6 The impact of the operational wind farm in relation to shadow flicker (including photosensitive epilepsy) is considered of 'Major Adverse' significance without mitigation. Appropriate mitigation measures are provided below.

12.7 Where necessary, a control system would be employed as part of the wider turbine control system to calculate whether shadow flicker may affect a property and thus will automatically shut the turbine down, re-starting it when the shadow has moved away from the property. This will ensure that there is a **Negligible** impact on local residential properties as a result of shadow flicker.

12.8 The proposed development is predicted to not cause photosensitive epilepsy in any prone person within the visual influence of the turbine.

1 Epilepsy Action (2007), 'Photo-sensitive Epilepsy'. Available online at: (http://www.epilepsy.org.uk/info/photo.html).

2 ODPM, (2004) 'Planning for Renewable Energy: A Companion Guide to PPS22', pp. 1

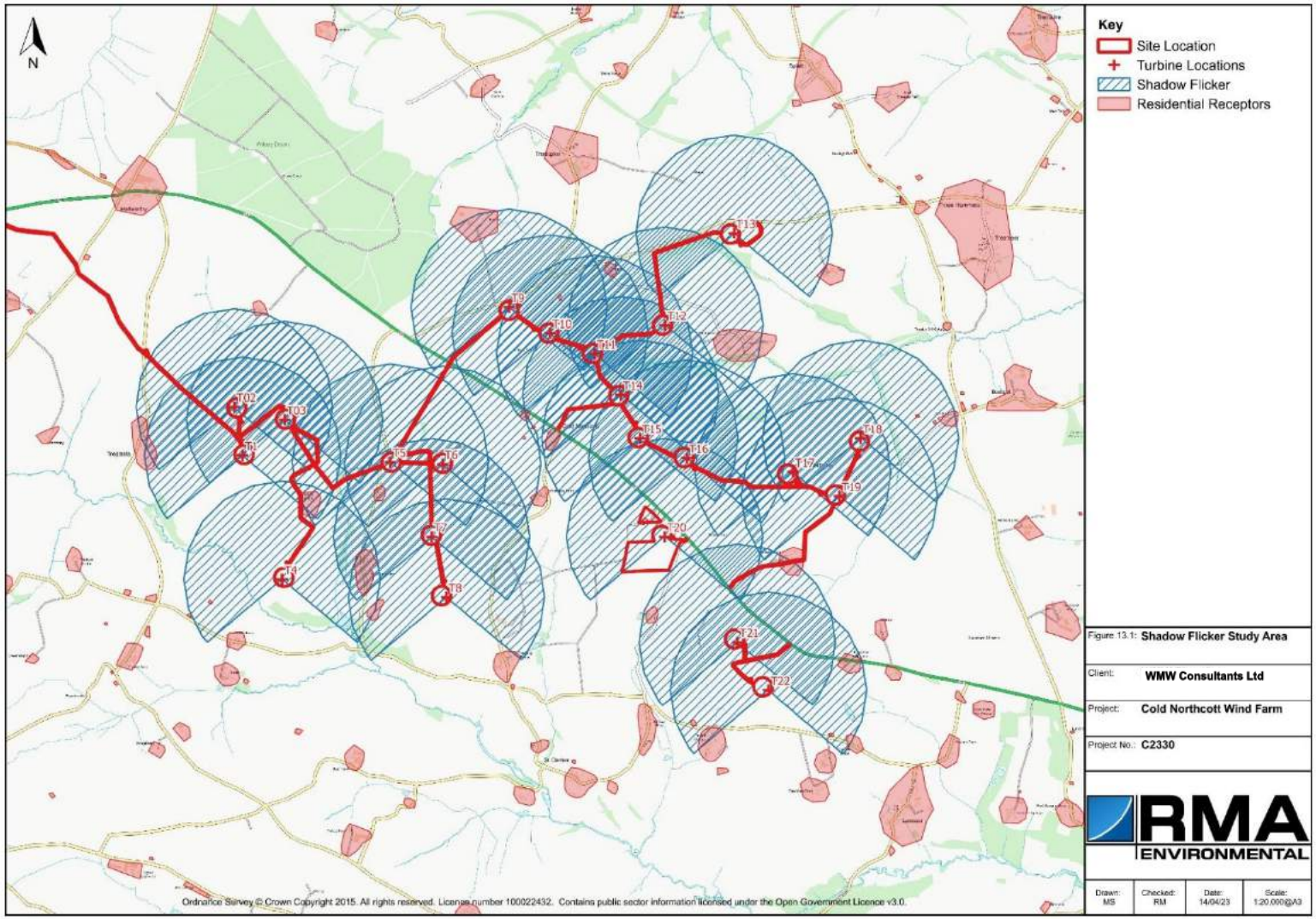

Figure 13: Shadow Flicker Study Area

13 SUMMARY AND CONCULSIONS

13.1 The ES sets out the key international, national and local legislation and planning policies that provide a compelling case for the development of renewable energy schemes as part of a commitment to limit carbon and other greenhouse gas emissions and the adverse effects of climate change and global warming.

13.2 The ES has identified that the repowering and replacing of Cold Northcott wind farm is likely to have **Negligible to Minor Adverse** residual impact on archaeology and heritage.

13.3 There is considered to be a **Negligible** residual effect during both operation and construction of repowering the wind farm on electromagnetic interference and aviation.

13.4 There is considered to be some **Adverse** impacts associated with the minor habitat loss and displacement of species during the construction phase; however, this is outweighed by the overall **Long-term Beneficial** impacts associated with the reduction in bat collisions and incorporation of the biodiversity enhancement site.

13.5 When considering Socio-economic and Health impacts, the proposed development will have an overall **Minor Adverse to Minor Beneficial Impact** in the short-term during construction and a **Negligible to Moderate Beneficial Impact** through its operation and decommissioning.

13.6 Whilst there are some **significant adverse** effects identified at both the construction and operational phases, they are primarily landscape and visual impacts that, in many cases are inevitable, by virtue of the size and scale of the proposed development. This must be viewed in the context of the established baseline, which is already influenced by a mix of operational and consented two and three bladed wind turbines, where the proposed development is set to repower 23 twin bladed turbines with 22 three bladed turbines. This will not increase the quantum of built form however the vertical scale will increase.

13.7 The overall residual impact during the construction phase on noise is considered to be **Negligible** and the residual impact during operational phase on noise is **Minor Adverse**.

13.8 With the inclusion of a control system on shadow flicker, the residual impact on local residential properties as a result of shadow flicker is **Negligible**.

13.9 Overall, the ES has not identified any exceptional circumstances which contravene prevailing legislation or planning policy and, in this regard, the proposed repowering and replacing at Cold Northcott wind farm should be given planning consent in order that it can contribute towards the County's and the wider UK targets for producing renewable energy and reducing carbon emissions.


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