Orsted Onshore Ireland Midco Limited

2: MEMORANDUM RESPONSE TO SUBMISSIONS RECEIVED

POPULATON AND HUMAN HEALTH

Proposed Oatfield Wind Farm Project, Co. Clare: ABP Case No. ABP-318782-24

June 2024

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FIGURES

1 POPULATION AND HUMAN HEALTH

1.1 Introduction

The following memorandum has been prepared to address submissions received during the observations and submissions period associated with the Oatfield Wind Farm Planning Application. The planning application for the aforementioned Proposed Development was submitted to An Bord Pleanála on 22nd December 2023 (ABP Case Number: ABP-318782-24). The period for 3rd party submissions and observations was 22nd December 2023 to 19th February 2024.

This is memorandum number 2 in the Oatfield Wind Farm submission response documentation, which addresses common themes identified within the discipline of Population and Human Health (corresponding to Chapter 6 of the EIAR, submitted as part of the planning application made to An Bord Pleanála).

References are made to submission responses on LVIA (memorandum no. 10 of the submission response documentation, hereafter referred to as **memorandum no. 10**), General and Planning (memorandum no. 1 of the submission response documentation, hereafter referred to as **memorandum no. 1**), Traffic and Transport (memorandum no. 12 of the submission response documentation, hereafter referred to as **memorandum no. 12**), and Noise (memorandum no. 9 of the submission response documentation, hereafter referred to as **memorandum no. 9**).

Responses to common themes in submissions received from regulatory & prescribed bodies are presented in Section 2 and responses to submissions received from the general public are presented in Section 3.

1.2 Statement of authority

This memorandum was prepared by Laurie McGee, Principal Environmental Consultant with RSK Environment Limited. Laurie is a corporate member of the Irish Planning Institute and the Royal Town Planning Institute and has over 30 years of experience in town and environmental planning consultancy. Laurie has considerable experience in onshore wind energy EIA and planning in a previous role as a Consultant Town Planner and EIA Project Manager, having worked on multiple wind farms in Northern Ireland and Northwest Ireland including preparation of Population and Human Health chapters.

2 REGULATORY & PRESCRIBED BODIES

2.1 Clare County Council

The submission from the Clare County Council Chief Executive's Report requests further assessment in the EIAR of the impact of the development on amenities in relation to the 12 O'Clock Hills. The response provided in relation to Population and Human Health is contained in Section 3.3 of this response, which references related submissions on LVIA, Traffic and Transport, and Noise responds to the Chief Executive's concerns.

This submission from Elected Members of Clare County Council echoes many concerns raised by their constituents regarding amenity, recreation and tourism. These points are comprehensively addressed in Section 3.3 and Section 3.4 of this Response. Additionally, separate submissions on LVIA, Traffic and Transport, and Noise provide further details on these concerns, which are referenced below. It is considered these combined responses adequately address the concerns raised by the Elected Members.

2.2 Fáilte Ireland

The focus of the submission by Fáilte Ireland relates to the impacts of wind farms on the character and scenic qualities of the Irish landscape, which are recognised as being of great importance to tourism in Ireland. Section 2.2 of **memorandum no. 10** provides a comprehensive response to this submission and is addressed in full in **EIAR Chapter 6 Population and Human Health** (hereafter referred to as **EIAR Chapter 6**) which recognises that "There is the potential for recreation and tourism amenities located in the study area to be impacted during the construction stage of the Proposed Development comprising works for the wind farm and for the Grid Connection Route (GCR) as well as the Turbine Delivery route (TDR). These relate mainly to landscape impacts arising from landscape change as a result of the Proposed Development, and traffic impacts related to movement of vehicles and construction machinery with potential to cause disruption during the proposed works." This is further addressed in response to Theme 3 Recreation and Tourism in this Response to Submissions Document.

In relation to operational stage effects, **EIAR Chapter 6,** Section 6.6.4, and Section 2.6 of **memorandum no. 10**, examines in detail the surveys undertaken by the Sustainable Energy Authority of Ireland (SEAI), Wind Energy Ireland and Fáilte Ireland over several years. As stated in the conclusion of **EIAR Chapter 6**, *"Overall, these survey results demonstrate that there is increasing acceptance and more positive views of wind energy in Ireland by people living, working, and visiting areas where there are wind turbines. It is anticipated that, over time, the wind turbines in the Proposed Development will become a feature of the landscape and will be viewed positively by the community".*

3 GENERAL PUBLIC

3.1 Theme 1: Population

A number of public submissions raise that the Proposed Development will lead to rural depopulation, in some cases citing that either people will not want to live near the wind farm or that family members will be unable to get planning permission to build a house in the area because of the wind farm**.** A related response can be found in Theme 3 Property Devaluation and Land Sterilisation in **memorandum no. 1**.

Whether people will want to move to the area or build a house in the study area of the Proposed Development (defined in **EIAR Chapter 6** Section 6.3.1) is a personal preference that is determined by a multitude of factors. Having an operational wind farm nearby can be viewed as either a positive or a negative factor.

As described in **EIAR Chapter 6**, Section 6.4.1, the study area has experienced population increase between census years 2016 and 2022. The average increase in population for the study area is 7.4%, with significant increases above 11% in the Cloontra and Kilseily Electoral Districts (ED). The average for the study area is more than three times the overall rural population increase nationally. According to a recent academic study that examined population change by ED[1], rural areas of Ireland grew 2% between 2016 and 2022 overall, with the greatest increases in rural areas nearest urban centres.

Enrolments in the local Broadford & Kilbane national school also evidence an increasing rural population in the study area. As reported by the Department of Education[2]. These have risen substantially from 114 in 2021/2022 to 136 in the 2023/2024 school year.

The future development of the area in which the Proposed Development is situated is set out in Clare County Development Plan (CDP) 2023 – 2029 which was adopted by Clare County Council in March 2023. The CDP sets policies on rural development that are dictated by national policy and guidance which allow the building of one-off housing in designated rural areas only as an exception where there is a demonstrated economic or social need and only where certain criteria can be met. Those criteria do not include whether a wind farm is present in the area or not.

The CDP also sets policies on location of wind energy developments in the County in its Renewable Energy Strategy (Volume 5) and Wind Energy Strategy (WES) (Volume 6). The WES examines wind resource, access to the grid, distance from residential properties, and environmental designations, and designates areas as a) strategic, b) acceptable in principle, c) open for consideration or d) not normally permissible, for wind energy development. It is noted that ten of the turbines in the Proposed Development are located in a *'Strategic Area'* which is eminently suitable for wind energy development (Objective WES Eight) and one turbine is in an area suitable for wind energy and designated in the CDP as '*Acceptable in Principle* (Objective WES Nine).

[1] RTÉ, Is rural Ireland really dying? What the facts and figures tell us, https://www.rte.ie/brainstorm/2022/0720/1311198-rural-ireland-population-cso-census-2022/, accessed 14/05/2023.

[2] Department of Education, Primary schools enrolment figures, https://www.gov.ie/en/collection/primary-schools/, accessed 14/05/2024.

3.2 Theme 2: Employment

A number of public submissions raised questions over the job creation potential of the Proposed Development. The Population and Human Health Chapter (**EIAR Chapter 6**) cites a report by The Sustainable Energy Authority of Ireland (SEAI) titled 'A Macroeconomic Analysis of Onshore Wind Deployment to 2020' (June 2015)[3]. This report looked at the job creation potential from investment in onshore wind to meet the Irish government's 40% renewable electricity target by 2020 (i.e., developing an additional 1.2 GW of onshore wind), and looked at different scenarios taking into account changes in investment and electricity prices. While this is a macroeconomic study, as an Irish study, it is a useful reference when estimating the job creation potential of a particular development at construction stage and across the development life cycle. The SEAI study shows that for all scenarios, the greatest job creation potential is at construction stage.

In the wind only scenario (i.e., excludes electrical transmission grid works) and assumed no increase in electricity prices, the SEAI study estimated that on average 1.07 direct jobs per MW could be created in construction (i.e., construction employment only). Using this figure as a multiplier, for the Proposed Development, which would have an installed capacity in the range of 52.8MW – 72.6MW, it is estimated that during the 18-month construction phase, the Proposed Development has the potential to create in the range of 57 to 78 construction jobs.

In the wind only scenario, when taking account of jobs generated from all economic activity when developing an onshore wind farm (includes construction, direct, indirect induced and investment demand jobs), the SEAI study estimated an average of 2.46 jobs per MW could be generated. Using this figure as a multiplier, the total job creation potential of the Proposed Development would be in the range of 112 to 154.

In an earlier EU wide macroeconomic study titled 'Wind at Work' commissioned by the European Wind Energy Association (2009)[4], the average per MW job creation potential was estimated at 2.6 jobs per MW excluding wind turbine manufacturing. This is not far off the multiplier from the SEAI study, and evidence that the job creation potential for the Proposed Development is not over inflated.

Whatever the multiplier that is used, it is correct to conclude that the Proposed Development on its own will have a short-term significant positive effect on the employment profile of the study area and a short-term slight positive effect on local businesses and services in the nearby towns and villages in the study area for the duration of the construction period.

While these macroeconomic studies look at job creation potential on a wider scale, it is important to note that, where there is a drive to produce more of our energy from renewable sources, the real benefit lies in maintaining the jobs for skilled workers engaged in renewable energy for the regions of Ireland.

[3] SEAI, A Macroeconomic Analysis of Onshore Wind Deployment to 2020: An Analysis using the Sustainable Energy Economy Model, June 2015, https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf, accessed 13/05/2024.

[4] EWEA, Wind at Work: Wind Energy and Job Creation in the EU, http://www.ewea.org/fileadmin/files/library/publications/reports/Wind_at_work.pdf, January 2009, accessed 13/05/2024.

A more recent study by KPMG for Wind Energy Ireland (April 2021)[5] examines the income generation and job creation potential of onshore wind in meeting the 2023 Climate Action Plan target of 8,200 MW of onshore wind by 2030. In this study, it is estimated that (excluding employment related to grid transmission works), by 2030 total direct and indirect employment in Ireland could rise by 35% to 7,200, with most of these jobs benefiting rural areas (i.e., where onshore wind projects are located). The KPMG study goes further to stage that "Meeting the target of ~8,200 MW by 2030 will require a sustained annual investment of ~400 MW annually. The number of cumulative construction job years for capital expenditure (capex) could grow from 800 in 2020 to 8,800 by 2030. This is likely a conservative figure, as it does not include a share of jobs in grid development, the systems operators, or regulators."

3.3 Theme 3: Recreation and tourism

A number of public submissions have raised that the Proposed Development will have an impact on the use and enjoyment of the 12 O'Clock Hills recreational area with concomitant negative effect on community health and wellbeing. The main point of these submissions relates to visual amenity but also claim that access to the recreational area would be restricted during the construction phase. Related responses can be found in:

- Theme 3 (perceived effect on the scenic and recreational value of the 12 O'clock Hills Trails and impacts on surrounding amenity and heritage receptors) of **memorandum no. 10** and in **EIAR Chapter 14 Landscape and Visual** (hereafter referred to as **EIAR Chapter 14**);
- Theme 6 (Construction Traffic Impact) of **memorandum no. 12** and in **EIAR Chapter 16 Traffic and Transport** (hereafter referred to as **EIAR Chapter 16**);
- Theme 4 (Public Paths and Tranquillity) of **memorandum no. 9**.

The 12 O'Clock Hills recreational trails comprise three overlapping looped walks with car parking available at trailheads at Belvoir, Snaty and at the linear walk at Fairyland. It is noted in **memorandum no. 10** that some of the looped walking trails will also pass immediately adjacent to the proposed turbines where they have the potential to afford prominent views of the turbines at a near distance. Nonetheless, it is important to note that a large extent of the looped trails within the 12 O'clock Hills trail network are contained on the north-facing slopes of the Broadford Hill, which have a limited potential for clear theoretic visibility of the full extent of the proposed wind farm as highlighted by the ZTV map provided in the **EIAR Chapter 14** and in **memorandum no. 10**, and that many sections of the trails on the north-facing Broadford Hills are contained in dense areas of commercial conifer forestry. It is further noted in **memorandum no. 10** that the main aspect of visual amenity in the 12 O'Clock Hills recreational trails area relates to the broad views to the north and west across the wider settled parts of Clare, away from views of the turbines in the Proposed Development.

As noted in **memorandum no. 10**, there are numerous precedents of national waymarked trails and hiking routes passing adjacent to wind farm developments, especially where conifer forest plantations are one of the more dominant land uses. the

[5] KPMG for Wind Energy Ireland, Economic Impact of Onshore Wind in Ireland, April 2021, Economic impact of onshore wind in Ireland (windenergyireland.com)

Boggeragh Mountains in Cork, which has a very similar landscape context, the Inspector did not consider that the impact of the Proposed Development would significantly affect the recreational value of the walking route. Indeed, extensive forestry plantations and the Boggeragh, Carraigduff and Knockduff (Boggeragh 2) wind farms are mentioned by hikers as features along sections of the Blackwater Way/Duhallow Way in the Boggeragh Mountains.[6],[7] Another example is the Galway Wind Way which is a series of linear and looped walks in the Galway Wind Park in Connemara which is promoted by Galway Tourism.[8] These examples are evidence that wind turbines can be a positive feature for a local area, in terms of recreation, tourism and for community health and wellbeing.

In a number of submissions, concerns were raised about the safety of pedestrians walking along local routes and to access the 12 O'Clock Hills looped trails and other walking trails in the area during construction of the wind farm, citing fear as a factor linked to community health and wellbeing. The Traffic and Transport Assessment contained within **EIAR Chapter 16** was undertaken in accordance with the Institute of Environmental Management and Assessment (IEMA) Guidelines titled 'Environmental Assessment of Traffic and Movement' (July 2023). As highlighted in **memorandum no. 12**, based upon actual traffic counts along public roads in the study area, projected change in traffic flows construction of the wind farm is below the 10% threshold, which would create no discernible environmental effect. Therefore, the effects to transport and access during construction would be temporary, slight and adverse in EIA terms for pedestrian severance, delay, amenity, fear and intimidation.

In relation to pedestrian and cycle traffic, Theme 6 of **memorandum no. 12** highlights that during the construction phase of the Proposed Development, it is predicted that there will be an additional 96 vehicle trips per day maximum on the delivery routes indicated. The impact of these 96 additional vehicle movements will have a moderate and short-term effect on pedestrian and cyclists, which will be minimised with the implementation of the mitigation measures outlined in **EIAR Chapter 16**, Section 16.9.2 which are to be contained in the Construction Traffic Management Plan (**EIAR Volume III Appendix 5.2**) provided in the EIAR. The measures include the appointment of a Traffic Management Co-ordinator; submission of a delivery programme to Clare County Council; communication via local letter drops and door knocks; and preparation of travel plans for workers coming to the site. These proposed mitigation measures are an assurance to the local community that their concerns and fears over use of the local roads for recreation, and the effects on health and wellbeing, will be met with appropriate attention to ensure the safety of pedestrians during the 18 to 24 month construction phase.

In relation to noise disturbance impacts on the enjoyment of the local recreational trails at 12 O'Clock Hills and its effects on community health and wellbeing, Theme 6 of **memorandum no. 9** provides a comprehensive response to this matter, and there is no need to restate these points. From this Response, it is noted that there is "limited guidance in Ireland or the UK which applies to non-residential external amenity areas such as parks or walking paths, but these areas are generally considered less noise-

[6] Happy Irish Hiker website, http://happyirishhiker.com/?s=Blackwater+Way%2FDuhallow+Way, accessed 14/05/2024.

[7] "Walk for the Weekend: Boggeragh Mountains, Co Cork", article by Daragh Peter Murphy, Irish Times Travel, 26 Feb 2020, accessed 06/06/2024.

[8] Galway Tourism, Galway Wind Way, https://www.galwaytourism.ie/galway-wind-park-trails/#Galway%20Wind%20Farm, accessed 14/05/2024.

sensitive due to the transient nature of their use." The WHO Guideline levels for outdoor living areas which relate to private residential amenity and is the only comparable limit that can be considered relevant is 55 db(A). Predicted noise levels for the Oatfield Wind Farm, even in proximity to the turbines, is below these WHO Guideline levels at approximately 50 db(A). Theme 6 of **memorandum no. 9** goes on to state "The addition of the Proposed Development will add to the 'soundscape' of the area. Whether this is judged to be negative or positive will be highly subjective, depending partly on its level and its character but also on the predisposition of the listener towards the source and their expectations of the area."

3.4 Theme 4: Human health

A range of issues related to human health were raised in the public submissions. Concerns were raised about public health impacts of the Proposed Development especially in relation to people with autism and epilepsy in the local community, and the impact of low frequency noise / infrasound and electromagnetic radiation (EMF), all relating to operational phase; as well as impacts to private water supplies during the construction phase. Related responses can be found in Theme 3 the perceived effect on the scenic and recreational value of the 12 O'clock Hills trails and impacts on surrounding amenity and heritage receptors of **memorandum no. 10**; and in Theme 1 Infrasound, Vibration, Low frequency and Health, and Theme 7 Autism and Noise Sensitivity of **memorandum no. 9**.

Reports by the Irish Health Service Executive (HSE) Public Health Medicine Environment and Health Group and the UK Centre for Sustainable Energy are authoritative sources of information on these concerns raised on the impact of wind turbines on public health. These reports are based upon wide ranging review of scientific literature on the topics which are reported on.

The HSE Position Paper on Wind Turbines and Public Health (February 2017)[9] was published in direct response to the concerns regarding potential public health impacts from wind energy, which is "a core element of Ireland's response to the EU Climate and Energy Policy Framework 2020 to 2030". This Paper highlights that "published scientific evidence is inconsistent and does not support adverse effects of wind turbines on health." The Paper advises that "adequate setback distances and meaningful engagement with local communities are recommended in order to address public concern". It is recognised in the Paper, that examining whether wind farm emissions may affect human health is complex, as it relates to the highly variable character of the emissions and the individual perceptions of them. This Paper brings together the latest research in relation to noise (including infrasound), shadow flicker, and electromagnetic radiation.

In regard to noise, the Paper concludes that there "is no direct evidence that exposure to wind farm noise affects physical or mental health", and further that "health effects from noise exposure occur at much higher levels of noise that are likely to be perceived by people living in close proximity to windfarms". The Paper further states that infrasound is lower in frequency than the normal limit of human hearing (20 Hz),and cites a WHO

[9] Health Service Executive, Position Paper on Wind Turbines and Public Health, April 2017, https://www.lenus.ie/handle/10147/621467, accessed 14/05/2024.

publication which states that “there is no reliable evidence that sounds below the hearing threshold produce physiological or psychological effects”.

Further, Theme 1 of **memorandum no. 9** provides a comprehensive response with numerous authoritative citations. Therefore, there is no need to restate these points. It is important to note the WHO Guidelines refer to annoyance, and recommend controlling noise at 45 dB L_{den} which, according to **memorandum no. 9**, is consistent with the noise levels of 35 to 40 dB L_{A90} referenced in the 2006 Wind Energy Development Guidelines (WEDG) or the UK ETSU-R-97 guidelines. In the case of the Oatfield Wind Farm the operational Noise Impact Assessment (**EIAR Chapter 13 Noise and Vibration**) predicted that noise levels will comply with the noise limits for all properties and all locations, with reduced operational noise modes applying to Turbines 2 and 4 to bring them to within acceptable limits.

In relation to shadow flicker, the HSE Paper (2017) states that “there is insufficient direct evidence to draw any conclusions on an association between shadow flicker produced by wind farms and health effects”, and that the risk of shadow flicker triggering seizures in photosensitive epilepsy is estimated to be extremely low. As reported in Section 6.8.6 of **EIAR Chapter 6**, *“through the implementation of a shadow flicker control system to curtail the operation of the turbines during periods where shadow flicker could occur, impacts from shadow flicker from the turbines can be mitigated, except for a short period once the pause criterion is met and for the turbine(s) to come to a stop. It is therefore considered that the residual shadow flicker effects on all sensitive receptors (including those outside the study area) would be short in duration and negligible, resulting in no significant adverse residual effects. The residual effect on amenity arising from operation of the turbines is therefore imperceptible.”* Therefore, with the application of mitigation, it can be corroborated that the risk of shadow flicker triggering seizures in photosensitive epilepsy is estimated to be extremely low.

In relation to electromagnetic radiation, the HSE Paper (2017) states that “there is no direct evidence from which to draw any conclusions on an association between electromagnetic radiation produced by wind farms and health effects”. The Paper goes further to state that the “level of extremely low-frequency electromagnetic radiation close to windfarms is less than average levels measured inside and outside suburban homes”.

As regards impacts on local community members with autism, Theme 6 of **memorandum no. 9** provides a comprehensive response to this point so there is no need to repeat it here. A further source on this topic is the UK Centre for Sustainable Energy publication titled Common Concerns about Wind Energy 2nd Edn (June 2017)[10] states that “There is simply no evidence within the scientific literature at all that there is any causal link between the development of a new wind power installation and people nearby developing autism spectrum disorders or having the symptoms of an existing autism spectrum disorder made worse. In the absence of any peer reviewed papers on this issue”. This is supported by a statement in the Common Concerns publication from the UK National Autism Society, a leading advice provider for autistic people and their families, which confirmed that this is not an issue that service users or members have raised as a concern, and that they are also not aware of any evidence suggesting a link.

[10] Sustainable Energy Centre, Common Concerns about Wind Energy 2nd Edition, June 2017, https://centreforsustainableenergy.ams3.digitaloceanspaces.com/wp-content/uploads/2023/02/18215651/common_concerns_about_wind_power.pdf, access 14/05/2024.

The potential for pollution of private wells and drinking water supplies and impacts to human health are addressed in **EIAR Chapter 9 Hydrology and Hydrogeology**, and summarised in **EIAR Chapter 6**. The hydrology and hydrogeology impact assessment examined the potential for pollution of ground and surface waters from various activities associated with construction of the wind farm and installation of cables for the grid connection. In the absence of mitigation, accidental release of suspended solids, hydrocarbons, horizontal directional drilling (HDD) fluid, wastewater sanitation contaminants, and cementitious material could pollute ground and surface waters which may be the source of water supplies, with potential for adverse effects on human health. These potential effects will be reduced with the implementation of the recommended mitigation measures which are incorporated in a Construction Environmental Management Plan (**EIAR Volume III Appendix 5.1**) and a Surface Water Management Plan submitted with the EIAR, will ensure the prevention of pollution to protect surface and groundwater quality, and thereby human health. Once mitigated, the release of pollutants (i.e., cementitious material, hydrocarbons, HDD fluid, etc.) during construction with potential for impacting ground and surface water quality will be minimal and temporary, if it occurs at all. The residual effects are expected to be temporary, adverse and neutral.

3.5 Theme 5: Correction in EIAR Chapter 6

As noted in Section 4.6.1 of the Planning and Miscellaneous matters response (see Memorandum no. 1 in the response to submissions documentation), the Population and Human Health EIAR Chapter (**EIAR Chapter 6**) which was submitted as part of the original planning application contained an error in the naming of ‘involved landowners’.

Figure 6.10 of **EIAR Chapter** 6 identified receptor number 4 and 606 as ‘involved’. It should be noted that receptor number 4 and 606 are not involved with the Proposed Development. An updated figure is provided below.

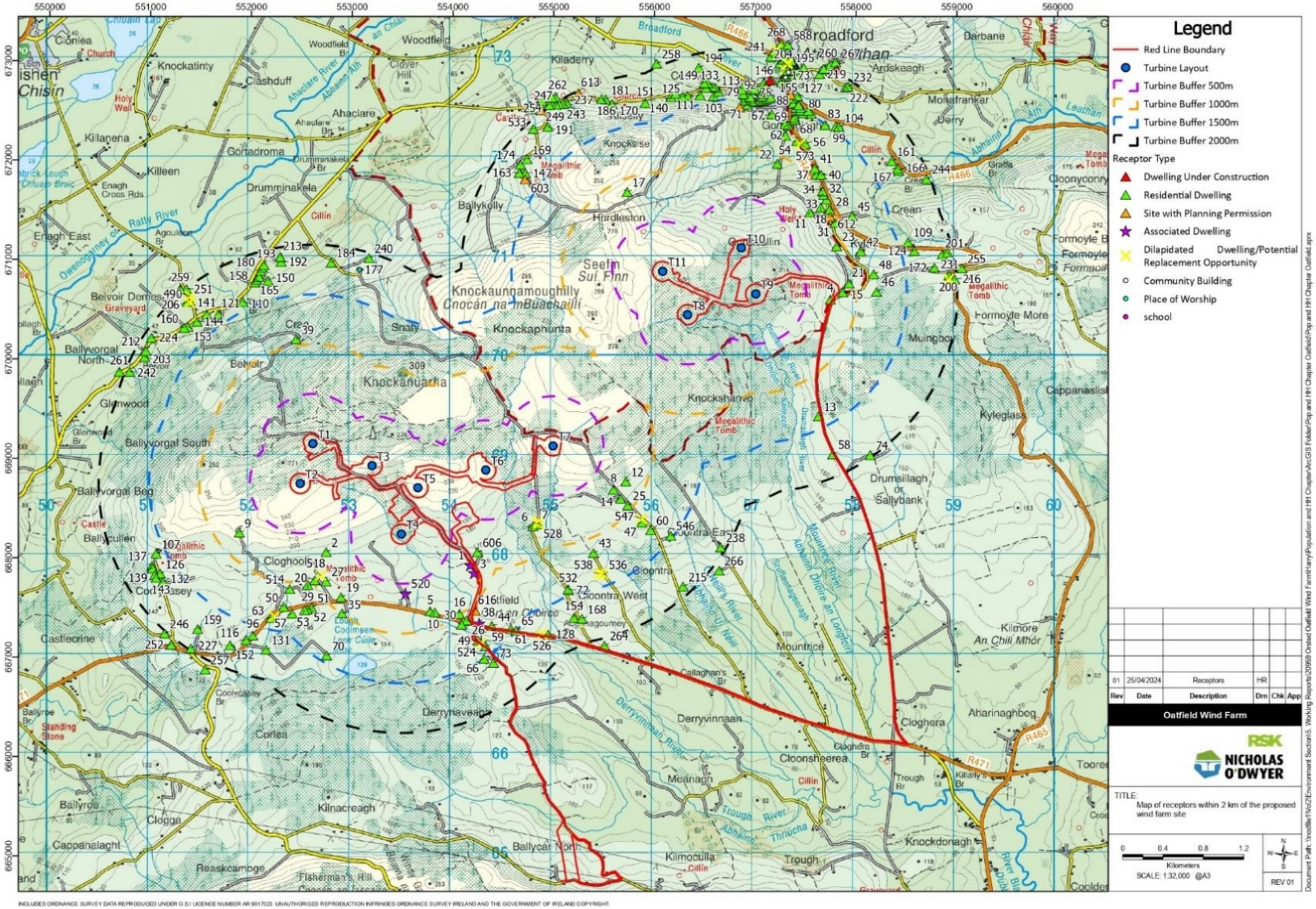

Figure 3.1: Map of receptors within 2 km of the proposed wind farm site