

Preface

The Environmental Statement (ES) summarised here, has been prepared in support of a planning application submitted to Milton Keynes Council (the "Council") in August 2006 for the Milton Keynes Wind Farm (the "Proposal"). The ES has been prepared and compiled by E4environment Ltd (E4e), an independent environmental consultancy, on behalf of MK Windfarm Ltd (as the Applicant) and Your Energy Ltd (as the Developer). The Proposal is on farmland comprising Petsoe Manor Farm, 2.5km east of the village of Emberton, and is for the purpose of generating electricity from wind energy.

The ES is presented in three main volumes, namely:

Volume 1 – Non Technical Summary

The non technical summary (NTS) presents a summary of the Proposal, its likely environmental impacts and proposed mitigation.

Volume 2 – Written Statement main text

The written statement comprises:

- An introduction and description of the Applicant/Developer and the scoping and consultation process;
- The reasons for the site selection and a description of the Proposal.

Then for each environmental issue identified through the scoping and consultation process the following is provided:

- A description of the prevailing baseline conditions;
- An assessment of the likely affects of the Proposal during construction and operation;
- The mitigation measures proposed to avoid, minimise or compensate for possible adverse environmental effects.

Volume 3 – Figures

Volume 3 comprises the figures which show the site location, site layout, wind farm construction details, landscape character, photomontages, wireframes, and maps exhibiting the zone of visual influence (ZVI), sites of ecological and archaeological significance, and noise monitoring locations. In addition, project plans and details relating to turbine types, access roads, hardstandings and substations are supplied.

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In addition to the three volume ES, the Planning Statement has also been undertaken:

Planning Statement

- Local planning policies;
- Regional planning policies;
- UK government energy and environmental policies, including international commitments to reduce greenhouse gas emissions.

On this basis, the Planning Statement assesses the balance between local effects and the local, national and global benefits of wind power development. The Planning Appraisal does not form part of the ES.

The planning application and the ES are available for inspection at the offices of Milton Keynes Council.

Electronic copies of the ES are available to download from the Milton Keynes Wind Farm website www.miltonkeyneswindfarm.com. Electronic (on CD-ROM) and/or paper copies can also be obtained for a charge of £10 for CD or £200 for paper copy (make cheques payable to Your Energy Ltd) by writing to Your Energy below.

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Introduction

1. The non technical summary (NTS) presents a summary of the Proposal, its likely environmental impacts and proposed mitigation. This NTS forms part of an Environmental Statement (ES) which has been prepared in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
2. The ES has been prepared in support of a planning application submitted to Milton Keynes Council (the "Council") in August 2006 for a seven turbine wind farm with ancillary development and a maximum installed capacity of between 14-21 MW.
3. The preparation of this ES has been an iterative process to ensure that land use issues and environmental issues are appropriately balanced. The final design and layout of the Proposal has been achieved following a series of revisions made as a result of the information and data gathered throughout the process pertaining to the sensitivity of certain areas on the study area, and the need to avoid such features.
4. It is the belief of the Developer that mitigation should be undertaken iteratively through the design and scaling of the proposal rather than as a retrospective response. Consequently, the Proposal being put forward has sought to avoid or mitigate environmental impacts at the design and layout stages.
5. The Developer has been actively engaged in public consultation including: Presenting at Parish meetings; holding a public exhibition; organising bus visits to its Burton Wold Wind Farm in Northamptonshire; creation of a project website www.miltonkeyneswindfarm.com where all project information has been available since October 2005 and been updated with the submission of this ES; and the production of Photomontages from near by residential areas in response to Emberton Parish Councils request and their delivery to the relevant households.

Project Description and Site Selection

6. The Proposal is for the construction and operation of a wind farm for 25 years comprising of:
 - seven wind turbines,
 - a substation,
 - anemometry mast,
 - access tracks including access off the public highway,
 - underground electrical cabling
 - a temporary construction compound

7. The Proposal would be operating for a period of twenty-five years and is on land comprising part of the Petsoe Manor Farm, located 2.5km east of Emberton, and north of Milton Keynes along the A509 (see Figure 1).
8. The proposed turbine locations are shown in Figure 2. Each wind turbine will have a generating capacity of 2 – 3 MW. The turbines will be a three bladed design mounted on a tower with a maximum rotor diameter of 90m and a maximum height of 125m to blade tip. The total installed capacity of the Proposal will amount to between 14 and 21 Megawatts (MW).
9. Based on the expected onsite wind regime and depending on the final capacity of turbine installed, the Proposal will generate on average an electricity output of between 31,867,000 and 42,317,000 kilowatt-hours (kWh) per annum. The kilowatt-hour being the usual “unit” of electricity for household consumption. Based on an annual electricity consumption per household of 4,700 kWh¹ or “units”, the annual electricity generated by the Proposal is equivalent to the annual average electricity needs of between 6,780 and 9,000 homes, which is equivalent to between 7% and 9.3% of homes in the Council area.
10. The Proposal would save emissions of between;
 - 27,400 to 36,300 tonnes of Carbon Dioxide (CO₂)²
 - 3,200 to 4,200 tonnes of Sulphur Dioxide (SO₂)
 - 1,000 to 1,300 tonnes of Nitrogen Oxides (NO_x)
11. The Proposal will contribute to the reduction of greenhouse gas emissions to the atmosphere, which are scientifically proven to be a major cause of climate change. The Proposal will therefore represent a commitment by the Council to the realisation of renewable energy targets for the United Kingdom and the South East Region.
12. Much of the land within Milton Keynes, particularly south-west of the M1, is zoned for economic, leisure, industrial and residential development and, hence, not suitable for the development of a wind farm. Other areas south-west of the M1 are also difficult to obtain agreements from landowners due to the limited income potential of wind farms compared to possible future housing and industry. Therefore, the open land north-east of the M1 was the principle area of search.
13. The remaining areas were considered against other factors such as road access, electrical access, separation from dwellings with respect to preventing of noise nuisance, avoidance of nationally designated landscapes, wind resources and a cooperative land owner.

¹ <http://www.bwea.com/edu/calcs.html>

² Emission savings calculations are based on the current generating capacity mix in the UK and the plant dispatch methodology. Any extrapolation of these annual emissions savings over the 25 year life of the wind farm may vary up or down.

14. Within Milton Keynes area, there are few areas large enough to accommodate a wind farm. The land comprising Petsoe Manor Farm is located in such a place where a wind farm could be located.
15. The site:
 - Has an adequate wind resource, above 6 m/s at 45m height
 - Is close to the local distribution grid infrastructure,
 - Has good access as it is close to the A509 road, linking the site to the motorway network,
 - Is in an area north of the M1 where agreements with landowners are possible to facilitate the building of a windfarm,
 - Is away from a high density of telecommunications links, in central Milton Keynes and Bow Brickhill,
 - Is under the Obstacle Limitation Surfaces of Cranfield Airport;
 - Is in a large enough land area, free from the restrictions of isolated properties, to accommodate a small wind farm. The nearest non-landowner residence is over 850m away.

Construction Assessment

16. The construction programme will take 6 to 9 months and consist of the following main operations, with certain operations taking place concurrently:
 - Install the site accommodation and compound;
 - Construct the site entrance and new access tracks;
 - Construct substation;
 - Upgrade existing access roads, tracks, construct new access tracks to turbine locations and construct crane hardstandings;
 - Excavate the wind turbine foundations and construct the turbine bases;
 - Excavate cable trenches and lay the power and instrumentation cables;
 - Install the substation electrical equipment;
 - Erect and commission the wind turbines;
 - Erect the monitoring mast;
 - Carry out reinstatement works, remove temporary accommodation and clear the site.
17. The various environmental impacts to the locality of the construction activities have been addressed in separate chapters in the ES (and sections in this NTS) most notably Noise, Ecology, Archaeology, Traffic and Transport and Socio-Economic Benefits. These chapters are discussed below.

Landscape and Visual Amenity Assessment

18. The LVA has examined the potential effects of the proposed Milton Keynes wind farm on landscape fabric, landscape character, landscape designations and visual amenity within a 15km study area.

19. The surrounding landscape is undulating and well vegetated so there will be only intermittent views of the Proposal from the surrounding area. As a result, significant effects on landscape character will be limited to within 2-3 km of the nearest turbines and effects on visual amenity will be limited to:
- Residents within 6 km of the nearest turbine whose views will not be interrupted by the landscape or vegetation;
 - Walkers, horse riders and cyclists using local bridleways and footpaths within 3 km of the nearest turbine and users of the Three Shires Way and Milton Keynes Boundary Walk;
 - Road users of minor roads around the site.

Noise Assessment

20. An assessment of the potential noise impact for the Proposal has been performed. The assessment has been carried out in accordance with the recommendations of ETSU-R-97, The Assessment and Rating of Noise from Wind Farms, as referred to in PPS22, Renewable Energy, advises that as the methodology by which noise from wind farms should be assessed. Baseline noise levels were measured at seven locations, representative of the nearest noise sensitive properties, as discussed with the Council. Analysis of the measured data has been performed in accordance with ETSU-R-97 to determine the pre-existing background noise environment at these locations.
21. Predictions of wind turbine noise have been made, based upon a measured sound power level for a 2 - 3 MW wind turbine and a calculation procedure which is considered to be worst-case. The assessment shows that the predicted wind turbine noise levels at residential locations meet the specified noise limits, under all conditions, except at Petsoe Manor Farm and Lodge Farm where there are small exceedences of the noise limits.
22. Mitigation has been proposed that enables the relevant noise limits to be met at both Petsoe Manor Farm and Lodge Farm. The turbines can be operated in reduced noise modes to limit the sound power level of the turbine at certain wind speeds and directions, enabling the noise limits to be met. Running in reduced noise mode also reduces the power output and therefore is only done when required. If alternative turbines are used for this project it will be ensured that all the relevant ETSU-R-97 noise limits are met.

Ecological Assessment

23. Following consultation with relevant consultees, detailed ecological surveys took place at the Proposal site. The studies focused on wildlife sites, protected plant & mammal species and migratory, wintering & breeding bird species. Additionally, a

Phase I habitat assessment was carried out. A number of species protected by legislation were found to use the site. Overall as a result of this assessment, the site was considered to be of district/borough level of ecological value, except for the Biological Notification Site (BNS), which is of County/ metropolitan value.

24. A number of ecological impacts may result from the construction and operation of the Proposal. These include habitat removal through the physical land removal around the turbine footprints, substation, meteorological mast and access tracks. Habitats may also be disrupted by accidental deposition of waste materials in on-site ponds or streams during construction or through removal of hedgerows to accommodate vehicles during the construction phase. Birds and wildlife may be disturbed by the noise impacts associated with construction of the Proposal, and casualties of animals and birds may also occur due to vehicle movements during construction and operation.
25. A number of mitigation strategies will reduce the ecological impact of the construction and operation of the Proposal. These include:
 - Design of site layout to avoid ponds, watercourse and semi-improved grassland on the site. Site layout has also sought to avoid placing wind turbines adjacent to woodland edge;
 - Timing of major construction work to avoid disturbance of important species;
 - Where survey finds evidence of badgers, access tracks will be a minimum of 30 meters away;
 - Maintenance of 10 metre buffer around the BNS to ensure that there will be no silt deposition from runoff from construction areas.
 - Removal of the small sections of existing hedgerow required for access will take place outside the main period for breeding bird activity (April 1st to June 30th).
 - Hedgerow removal will not include any removal of hedgerow trees.
26. Given the extensive design and post-design mitigation, the construction and operation of the Proposal is likely to result in ecological impacts of a minor significance only.

Archaeological Assessment

27. Following an archaeological desktop study and topographical survey of the Proposal site, several features of archaeological interest were encountered. These included remains of a medieval settlement at Petsoe Manor Farm, Petsoe Manor Farm itself, and roman pottery shards. Many of the archaeological features are no longer visible, but evidence of them exists in landforms and on historical maps. For example, field boundaries quite possibly follow the boundary of historic woodlands that no longer exist, and medieval cultivation is evidenced by the remains of ridge and furrow earthworks. Additionally, the Medieval Church of St Matins once existed on site. Although nothing is visible above ground level, the church site is a scheduled ancient monument of national importance. The design of the Proposal has been to avoid locating tracks across the fields containing the preserved ridge and furrow and to avoid siting any infrastructure near the site of the church. Overall,

the studies demonstrated that the major construction works would be located in areas with no known archaeological remains.

28. However, based on the possibility that further unknown archaeological remains may be present, the Council Archaeologist requested that trial trenching was undertaken as a test of potential remains. Trenching was carried out at all seven proposed turbine locations. Only two of the trench sites revealed any evidence of archaeological remains, which included pottery shards and evidence of ditches. This tends to confirm the conclusions of the desk-based archaeological assessment that there are few sites of archaeological significance within the proposed development area.
29. With proper mitigation, such as preparing a Council approved Schedule of Archaeological Resource Management, there is unlikely to be a significant impact on either existing or undiscovered archaeological remains.

Cultural Heritage Assessment

30. An assessment of the possible impacts on the cultural heritage of the Proposal was undertaken. The assessment examined the potential effects of the Proposal on the character, appearance, special interest, important views and/or settings of Conservation Areas, Grade 1 Listed Buildings, Scheduled Ancient Monuments, and Historic Parks and Gardens within 3.5km of the nearest wind turbine.
31. St Martin's Church (which is located on-site) and a Roman Villa near Newtown Lodge Farm, are two Scheduled Ancient Monuments (SAM's) which have not been assessed as they have no visible remains at the surface and are not considered to have an immediate or wider setting that can be affected by the Proposal.
32. The assessment revealed that there are some views which will have significant view changes as a result of the Proposal. However, the Proposal is not sufficiently close enough to result in visual dominance, and the views will be partially screened by intervening vegetation and surrounding buildings. Over time, some of the affected views will be progressively screened as the surrounding trees mature. Additionally, some of the impacted views of the Proposal are not considered to be important designed views and will not affect the overall objectives of the designation.
33. In the case of each of the remaining cultural features, the Proposal is not adjacent to or within the immediate or wider setting; therefore, the features will not be directly affected by the Proposal nor will the Proposal result in visual dominance of the feature. Overall, the Proposal will not have an unacceptable affect on the cultural heritage of the area.

Electromagnetic interference and air safeguarding Assessment

34. Microwave and other electromagnetic signals are used by communications systems as a transmission medium. Such systems are operated by statutory agencies and commercial companies. Where any large structure (such as wind turbines) is constructed close to the signal path there is the potential for interference. Electromagnetic Interference (EMI) can occur in two main ways:
- Physical interference, for example shadowing or reflection of signals;
 - Electrical interference, which may affect communications equipment.
35. To ensure that the Proposal will not be a cause of EMI, a wide range of communication system, microwave and telecommunication operators have been contacted to identify any possible areas of interference. All telecommunications operators have been consulted. Several links were identified on or nearby the study area. The Proposal has been designed to prevent interference to the Cable and Wireless telecommunication link crossing the study area, and the MLL Telecom link north of the study area. The Developer and Anglian Water are discussing mitigation strategies, to resolve their concerns with an undefined telecommunication link in the area of the site, such as rerouting or cabling the affected links.
36. When a wind farm is constructed there is the possibility of TV reception interference due to the presence of the turbines. The Developer is committed to ensuring that any problems that occur to television reception will be rectified swiftly and at the Developers cost.
37. To ensure that the wind turbines are not causing any adverse affect to primary radar system, instrument landing systems, or aircraft training areas, the Ministry of Defence (MoD), Civil Aviation Authority (CAA), NATS (National Air Traffic Services) and Cranfield Airport have been consulted, none of which had any objections to the proposal.

Assessment of Land Use, Driver Distraction and Shadow Flicker

38. Factors that could compromise land use and safety have been assessed in respect of the Proposal. These factors include private and public use of the land, driver distraction and shadow flicker.
39. The Proposal uses 3.0 Hectares of farmland, which is approximately a 1 % land loss for the landholding. Normal farming operations will continue on the remainder of the landholding and these activities will not be compromised.
40. In respect of public access and amenity, access to the paths will only be affected during the construction phase of the Proposal. However, disruption to public access

will be minimal because at no point do the public paths and site access tracks cross paths.

41. Although there are no statutory separation distances, the Proposal incorporates a 200m separation from the bridleways, in accordance with BHS guidelines and a 125m separation from the public footpath.
42. There is no evidence to date in the history of wind farm development of distraction impacts to vehicle drivers despite a large number of UK wind farms being clearly visible from major roads.
43. The proposed wind turbines are variable speed and the blades would rotate at between 6 and 22 rpm, giving blade passing frequencies of 1.1 Hz and below and shadow flicker frequencies of the same. This speed is well below the frequencies of 5 – 30 Hz associated as triggers for photosensitive epilepsy (The National Society for Epilepsy, September 2002). Shadow flicker will not pose a direct health risk to persons susceptible to photosensitive epilepsy.
44. A specialised computer package called WindPro has been used to determine the worst case number of hours in the year when shadows may be cast from the wind turbines towards dwellings within ten rotor diameters (900m) of the wind turbines.
45. Three properties can potentially be affected by shadow flicker, for a maximum of 21 hours and 23 minutes over the entire year. However, with adequate wind farm control systems, where turbines are shut down when specific conditions arise, the occurrence of shadow flicker can be removed, where appropriate.

Assessment of Socio Economic and Environmental Benefits

46. Turbines are generally imported from overseas and constitute around 75% of the overall investment value of the Proposal. However, up to £2.5 million could potentially be made available to sectors of local industry during the construction phase, of which upto 50 people will be employed on site. These industry sectors include:
 - Civil Engineering,
 - Electrical Service Companies,
 - 28,000 tonnes of stone is required from local quarries
 - 400 loads of concrete from local suppliers,
 - Steel reinforcing suppliers and fixers,
 - Road haulage companies,
 - Plant hire companies,
 - Ancillary workers (e.g. fencing, timber trades, hotels)
 - Consultancy services

47. The annual average output from the Proposal of between 31,867,000 to 42,317,000 kWh would be equivalent to the total annual average consumption of between 6,780 to 9,000 households. There are approximately 96,640 households in the Milton Keynes area, and so, the Proposal will generate electricity equivalent to the needs of 7 – 9.3 % of the area’s dwellings.
48. The Proposal would make significant reductions to emissions of pollutants that are responsible for damaging health, ecosystems and causing climate change.

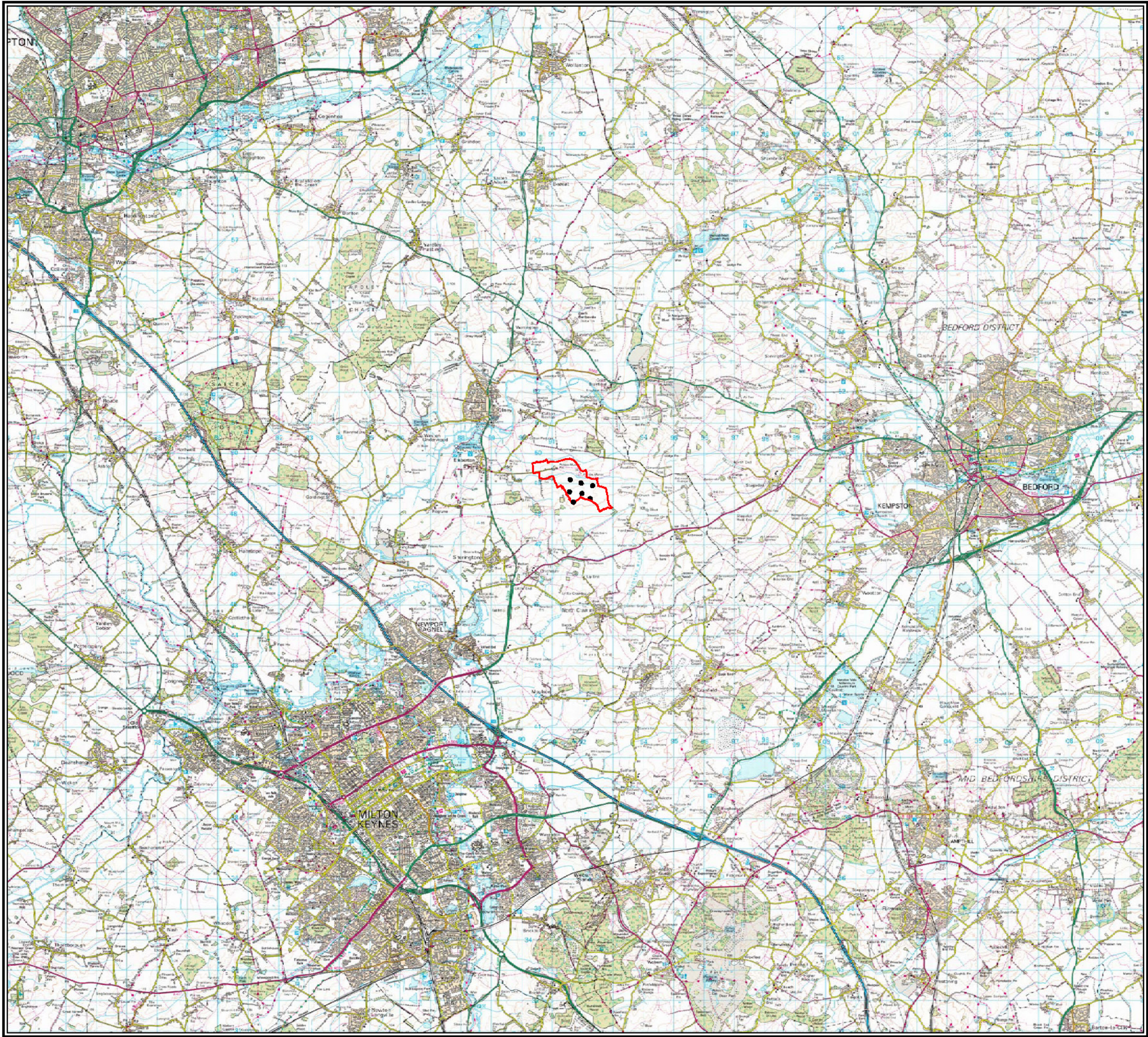
CO ₂	27,400 to 36,300 tonnes/annum
SO ₂	3,200 to 4,200 tonnes/annum
NO _x	1,000 to 1,300 tonnes/annum

Traffic and Transportation Assessment

49. A route has been proposed following a survey of the road network in the vicinity of the Proposal. The survey was carried out using swept path analysis of any locations along the route that were considered to be restrictive to the passage of turbine components. Given its close proximity to the motorway network this is the only route considered suitable for the delivery of turbine components;
1. Leave M1 at Junction 14
 2. Travel northwards along the A509
 3. Turn east at Junction of A509 / C14 onto C14 Newton Road at grid reference 488800E 249420N
 4. Continue east along the UC476 to the proposed site entrance.
50. The proposed turbine delivery route avoids major settlements, residential areas and sensitive locations such as churches, schools and hospitals.
51. Dependent upon their source, deliveries of aggregates, concrete and other builders materials may require to access the site from the north of the proposed site, and may therefore use the A509 (Southbound) to its junction with the C14 Newton Road and continue on the above route to site.
52. All turbine components can be delivered to the site without major modifications to the A509 and C14 (Newton Road). Widening of the UC476 will be required and the construction of passing bays to facilitate traffic flow will be required.
53. The increases in traffic due to construction on the roads are not significant. Where there is a doubling of traffic flows on the UC476 on each of the seven days when the seven concrete foundations are being poured peak construction traffic day when the increase is from an existing traffic flow of 14 movements an hour to 27 movements an hour.

Conclusions

54. The site selection and the final Proposal design has evolved through an iterative development process based upon the technical, planning and environmental constraints identified through consultation, environmental studies and analysis. Throughout the course of this process, particularly with regard to input from the consultees, the design of the Proposal has been amended in response to the potential issues identified by the independent specialist consultants and consultees. The Developer has sought to minimise the potential environmental impact and technical effects identified.
55. Wind power forms a major part of the Government's renewable energy programme. The seven turbines at the Proposal site are capable of supplying electricity equivalent to the needs of between 6,780 and 9,000 homes in the Milton Keynes area, which is 7 – 9.3% of the households.
56. The Proposal would make a significant contribution to reductions in the emissions of pollutants that are responsible for damaging health, damaging ecosystems and causing climate change, and the proposal would have substantial and significant benefits both economically and environmentally on a local, regional, national and international level.
57. It is for these reasons that the Proposal is submitted for planning determination.



Project:

Milton Keynes

Wind Farm

Client:



Key:



Location of Turbines

Notes:

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Scale 1:125 000



Figure 1
Site Location Plan

**Milton Keynes
Wind Farm**







Project:

Client:



Key:

Drawing scale: 1 : 10,000

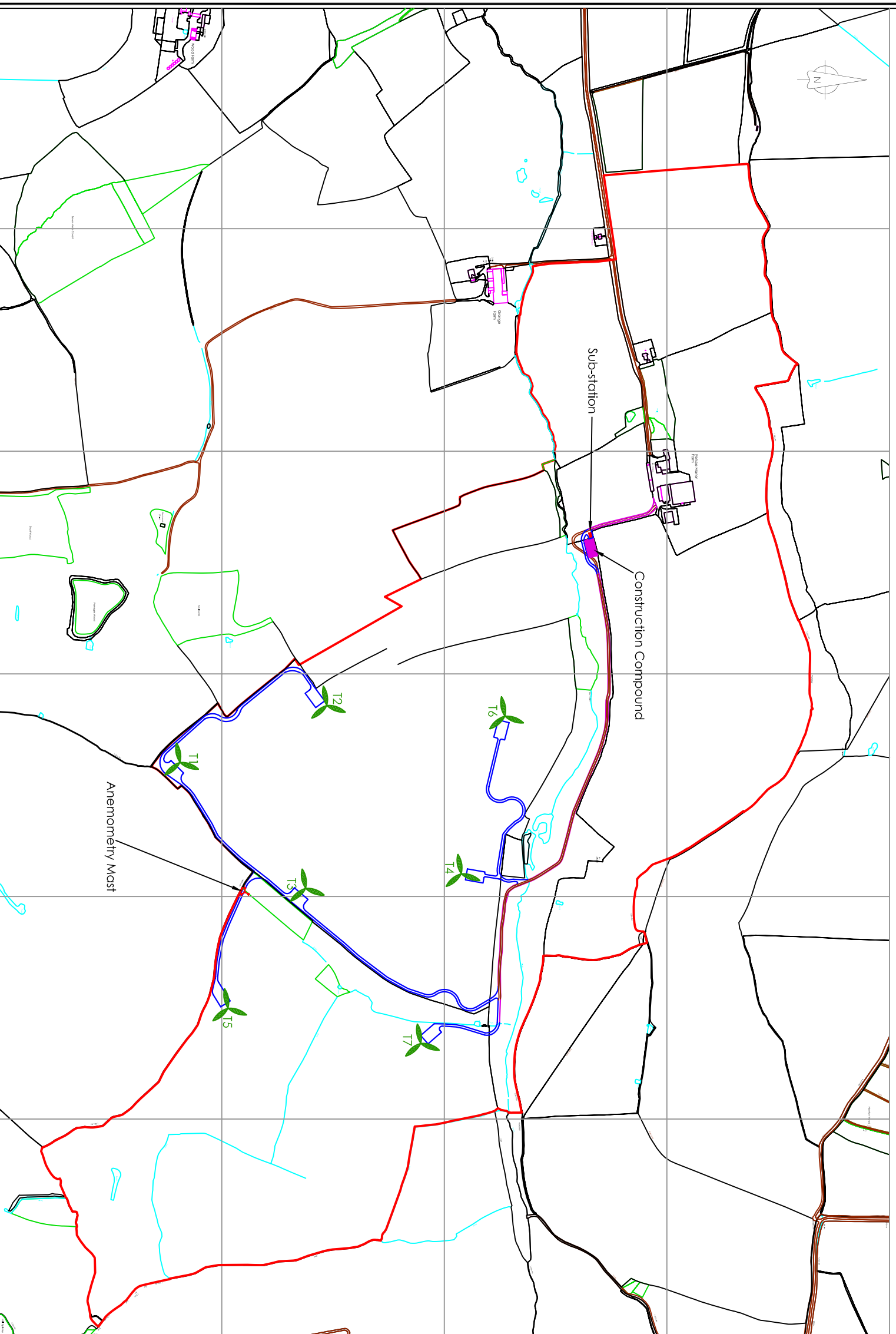
-  Study Area Boundary
-  Improved Site Access Tracks
-  New Site Access Tracks
-  Wind Turbine Generator
-  Sub-station
-  Construction Compound
-  Anemometry Mast

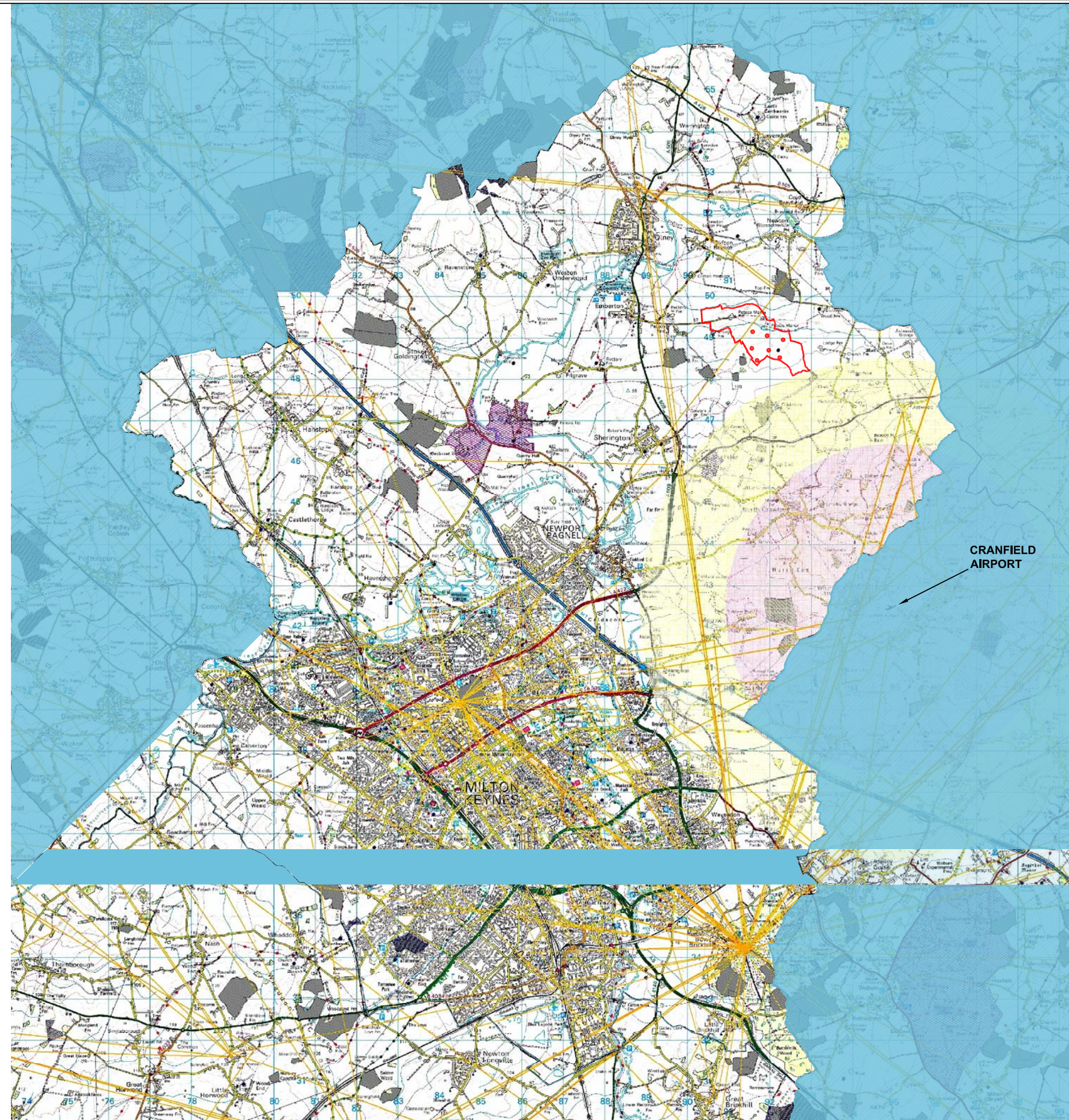
T1	491699	248406
T2	491571	248736
T3	491985	248685
T4	491949	249038
T5	492251	248514
T6	491595	249136
T7	492330	248947

Anemometry Mast	491990	248552
Substation	491190	249330

Figure: 2

Milton Keynes Wind Farm General Arrangement Plan





Project:



























Milton Keynes

Wind Farm

Client:



Key:

-  Site boundary and turbine locations
-  Areas outside of Milton Keynes District Boundary
-  District Boundaries
-  Areas of Outstanding Natural Beauty
-  National Parks
-  Sites of Special Scientific Interest
-  National Nature Reserves
-  Ramsar Sites
-  Important Bird Areas
-  RSPB Reserves
-  Special Protection Areas
-  Special Areas of Conservation
-  World Heritage Sites
-  World Heritage Coast
-  Ancient Woodlands
-  Parks & Gardens
-  Scheduled Ancient Monuments
-  BBC Primary Transmitter
-  BBC Secondary Transmitter
-  Microwave Link
-  Cranfield Airport
-  The Inner Horizontal Surface
-  The Conical Surface
-  Air Surveillance and Control Radar
-  Windfarms
-  Meteorological Radar

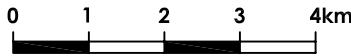
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Figure 3
Constraints Map