

Extract from Liverpool City Region Renewable Energy Capacity Study 2011.

Extract from the Stage 2 report, prepared by Arup as a joint Study between the Liverpool City Region local authorities, West Lancashire and Warrington, approved by Sefton Council in January 2011.

From Chapter 3. Priority zones and areas of search

3.4 ONSHORE WIND

The following image (below) displays the indicative physical size of wind turbines and their approximate relevant generation capacity. To help put these into context, the Port of Liverpool turbines (2.5MW capacity) have hub heights of around 80m (second from the right).

Unlike the installation of CHP technology, wind turbines have a lesser requirement to be located in close proximity to areas of high demand for generated energy (although all generation is best located near demand as it reduces the need for higher capacity infrastructure at all voltage levels as well as reducing the losses created by moving electricity across distribution networks). The key technical driver is that of resource availability, i.e. local wind speeds, and the proximity of electrical distribution network infrastructure.

3.4.1 Approach

It is wind speeds, in combination with local topography considerations that ultimately influence the potential electrical output from turbines. For the purposes of the Stage 2 study, wind speeds exceeding 6.5m/s, plus local constraints, have been referred to in order to identify areas of least constraint for large scale wind energy development. [Table 2](#) below presents the elements considered in identifying constraints to wind energy development.

3.4.2 Wind Speed Data

The wind speed data used to identify wind potential in this study is taken from the NOABL database produced by Department for Energy and Climate Change (DECC). Whilst it is acknowledged that other sources of data exist, and there is a margin of error with this tool, including the fact that it does not take account of local wind obstacles, use of the NOABL database was felt to be appropriate, as a recognised industry standard, for the purposes of deriving relative wind potential.

Constraint Type	Classification	Present In Areas Identified	Rationalisation
Scheduled Monuments	Prohibitive	No	
Parks & Gardens	Prohibitive	No	
Conservation Areas	Prohibitive	No	
100m Listed Building Buffer	Prohibitive	No	
500m Address Buffer	Non-prohibitive	Bordering all areas identified	Whilst not considered wholly prohibitive, extents of these buffer areas have been used to limit borders
Deep Peat Areas	Prohibitive	No	
Bird Migratory Zones	Prohibitive	No	
SPA SAC Ramsar	Prohibitive	No	
LNR NNR SSSI	Prohibitive	No	
Green Belt Land	Prohibitive - unless very special circumstances are demonstrated	Yes - all 3 areas	Use of Green Belt land to site wind turbines is not without precedent

The outline quantification of associated potential wind turbine capacity and output within Stage Two work has featured the rationalising of NOABL data to account for realistic wind speed availability, including potential obstacles. Note that industry standard guidance is that average wind speeds in excess of 5 - 6m/s are required to generate worthwhile quantities of electricity. Given the relative imprecision of the data available, the areas of least constraint identified in this study have shown wind speeds equal or greater than 6.5m/s. This shows a best estimate of suitable locations, subject to identified constraints, including Green Belt.

It is highly recommended that further study into the suitability of recommended areas take place, including site-specific wind studies in the event that development proposals come forward. Without these, localised effects produced by factors such as prevailing wind directions, proximity and height of buildings, cannot be determined.

3.4.3 Areas of Least Constraint

The following table provides a summary of the areas of least constraint identified in relation to potential wind turbine installations. Note that all sites are within Green Belt areas and all are constrained to a greater or lesser extent. Table 3 does not identify these sites as being most suitable for wind energy development, but presents a best estimate of where wind energy

	Sub-region	Location Description	Local Wind Conditions	Approx. Annual Electrical Outputs	Potential Constraints	Proximity To Transport Links
Wind 1	West Lancs	Adjacent to River Alt, South of Great Altcar	Approx. average wind speed at 45m AGL = 6.5-7.0m/s	15kW ≈ 10.6MWh / year	<ul style="list-style-type: none"> • Flood risk zone 3a (essential that any development would be designed to remain operational and safe for users in time of flood) • Green Belt • Other environmental considerations 	Area is adjacent to A565, just South of Little Altcar
Wind 2	Sefton	Adjacent to River Alt, South of Great Altcar	Approx. average wind speed at 45m AGL = 6.5-7.0m/s	15kW ≈ 10.6MWh / year 2.5kW ≈ 1,100MWh / year	<ul style="list-style-type: none"> • Site is closer to residences within and around Great Altcar than adjacent PZ 1 • Other environmental considerations 	Area is adjacent to A565, just South of Little Altcar
Wind 3	West Lancs	Adjacent to A5209, between Burscough and Newburgh	Approx. average wind speed at 45m AGL = 6.3-7.0m/s	15kW ≈ 10.6MWh / year	<ul style="list-style-type: none"> • Green Belt • Adjacent to conservation area • Other environmental considerations 	Area is adjacent to A5209

3.4.4 Interpretation

It is important to note that whilst this desk based study has helped to identify areas of least constraint for onshore wind in the study area, it has not provided a full viability assessment. Major potential constraints, such as landscape character, flood risk and cumulative impacts of development have not been accounted for. The findings of the study therefore do not identify preferred areas and do not preclude the requirement for detailed assessment should a

development proposal come forward. Similarly the broad areas, whilst showing least constraint do not preclude other areas from having potential for wind development.

For example, the study did not identify areas of potential in Liverpool, however, wind energy development is already taking place on the water front, demonstrating that whilst there may be constraints, these do not have to be show stoppers.

In recognition of this, partner authorities demonstrating most potential for wind energy were asked to identify if there were any over-riding issues of local importance that might constrain this type of development. In the case of Wirral, the project team was asked to consider local valued landscapes as an additional key constraint and therefore no area of least constraint has been identified in this area.

In West Lancashire, it was noted that the site adjacent to A5209, between Burscough and Newburgh neighbours a conservation area and whilst the area continues to be identified, implications of a development on the character of the conservation area will be a key consideration should any development proposal come forward.

The results showing broad areas of least constraint demonstrate that there will be particular value in assessing in more detail whether or not wind development in these areas can be considered acceptable by the planning authority. The broad areas should in no way be considered as either a designation or a conclusion that wind energy elsewhere in the study area is unsuitable.

To illustrate this point further, in the 2009 Knowsley Study, opportunities for wind energy were also identified to the north of Halewood. These sites have not come through in the current assessment due to the constraints considered, however there will still be potential to promote these sites, subject to further detailed site investigation.

Landscape and the Green Belt: a key question raised by stakeholders is whether or not the provision of wind energy may cause harm to the Green Belt and or sensitive landscape areas. The Green Belt is in place to, amongst other things, safeguard the countryside from encroachment and avoid harm to visual amenity by development that would be conspicuous. PPS22 for Renewable Energy recognises the potential for wind turbines to have *“the greatest visual and landscape effects”*. However the policy requires that local authorities recognise that the impact on the landscape will vary according to the size and number of turbines and the type of landscape involved.

To this effect, the approach recommended is that Green Belt is considered to be a constraining factor for wind energy development. Very special circumstances need therefore to be demonstrated before a wind energy proposal could be deemed acceptable in the Green Belt.

3.5 PRIORITY ZONES AND BROAD AREAS KEY POINTS

It should be noted that the identified Priority Zones and broad areas of least constraint are not intended to represent an exhaustive list of all potential areas where biomass CHP and onshore wind turbines may be employed. Instead, these zones represent areas where suitable (relevant) resources for each technology have been identified and which represent the “quickest wins” in terms of implementing them. Potential sites for energy centres have not been identified and where the relevant planning authority wishes to promote a Priority Zone, a key task will be to identify potential energy centre sites.

The map overleaf displays the locations of all identified Priority Zones for decentralised heat and the broad areas of least constraint for wind, with reference numbers linked to the summary tables presented in this section.