



Developing Successful Civic Wind Energy Projects

July 2014



Introduction – ASC Renewables

ASC Renewables is an ethical developer of renewable energy projects in the UK, based in Manchester.

The team specialises in developing on-shore wind projects in partnership with Local Authorities, Utilities, Blue-Chips and Independent Landowners.

Turn-Key Partner:

The team delivers each project from cradle to grave, including site identification and feasibility, investment structuring, planning, construction management and lifetime operation.

Why Develop Civic Wind Energy

Financial Benefit:

High returns on investment, new income stream, utilises existing land assets.

Environmental Benefits:

Significant CO₂ reductions.

Community Benefit:

Area saturation, community ownership, protecting front-line services.

Small Scale Wind Turbines



Typical Features:

- > 11kW - 50kW
- > Height (blade tip) - 34m
- > Hub Height - 15m-27m
- > Blade Length - 7m
- > Rotor Diameter - 14m

Financial Benefits:

Capital Investment - £70k
Financial Return - £170k
IRR – 9%
Project life – 20 to 25 years

Environmental Benefits:

CO₂ displaced – 14 tonnes
Homes powered - 8



Medium Sized Wind Turbines



Typical Features:

- > 0.5 MW
- > Height (blade tip) - 76m
- > Hub Height - 50m
- > Blade Length - 26m
- > Rotor Diameter - 51m

Financial Benefits:

Capital Investment - £1.6m
Financial Return - £7m to £9m
IRR – 14%
Project Life – 20 to 25 years
£320k Typical Annual Return

Environmental Benefits:

CO₂ Displaced – 629 tonnes
Homes Powered - 263



Large Scale Wind Turbines



Typical Features:

- > 2.3 MW- 3.0 MW
- > Height (blade tip) - 105m
- > Hub Height - 60m-70m
- > Blade Length - 35.5m
- > Rotor Diameter - 71m

Financial Benefits (5 turbines):

Funding Options Available
Capital Investment - £42m
Financial Return - £190m
IRR – 28%
Project Life – 25 to 30 years



Environmental Benefits:

CO₂ Displaced – 48,400 t
Homes Powered – 5,750

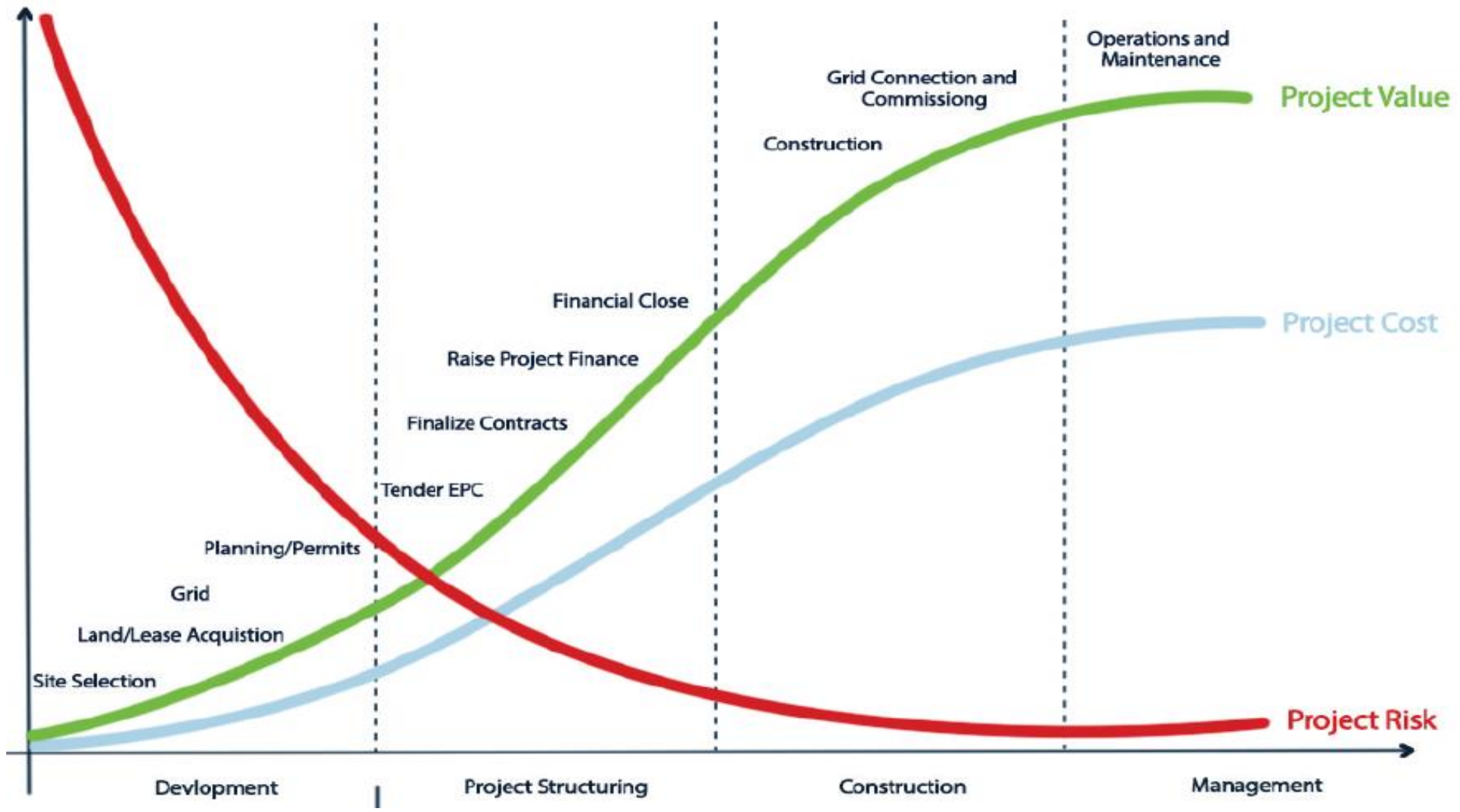
Project Structure

ASC is working with many UK Councils, having reviewed a number of project structures which work for Municipal Wind Energy projects:

- Full Ownership
- Part Ownership
- Joint Ventures
- Land Royalties

Project structures are flexible and the Council has greater options once planning consent is secured.

Investment Risk Profile



Funding Availability

Development Phase
(Pre-planning)

External finance is extremely difficult to raise for projects which have not secured planning consent, do not have grid connection offers accepted and/or detailed wind measurement statistics.

Post planning
Consent

External finance is available for large-scale projects and a portfolio of medium scale projects.

Cost of Finance

Senior Debt

Available for 60% to 80% of the total project cost, subject to conditions.

Typical interest rate is 6.25% to 6.75%

Mezzanine Debt

Second charge debt, available up to 100% of total capital cost.

Typical rates between 12% and 15%, debenture style loan.

Blended cost of Capital

Typical total cost of 9.5%

Financial Benefit



“four 2.5 MW turbines will create the equivalent of a 3.5% council tax cut each year for 25 years”

Cllr Colin Lambert
(LGC Article Published Oct 2013)

Each medium scale turbine will deliver £320k of new cash to Rochdale annually

Identifying Suitable Locations

Three stage feasibility process to efficiently review an entire Borough. A cost effective way to identify suitable locations:

- Stage 1 - **Initial Screening** to exclude unsuitable locations
(Wind speed, proximity to houses, key designations)

- Stage 2 - **Desktop Technical Assessment** - In-depth review of remaining locations

- Stage 3 - **On-Site Technical Evaluation** identifies proposed turbine locations, grid connection options, access

Stage 1 Assessment

Wind Resource

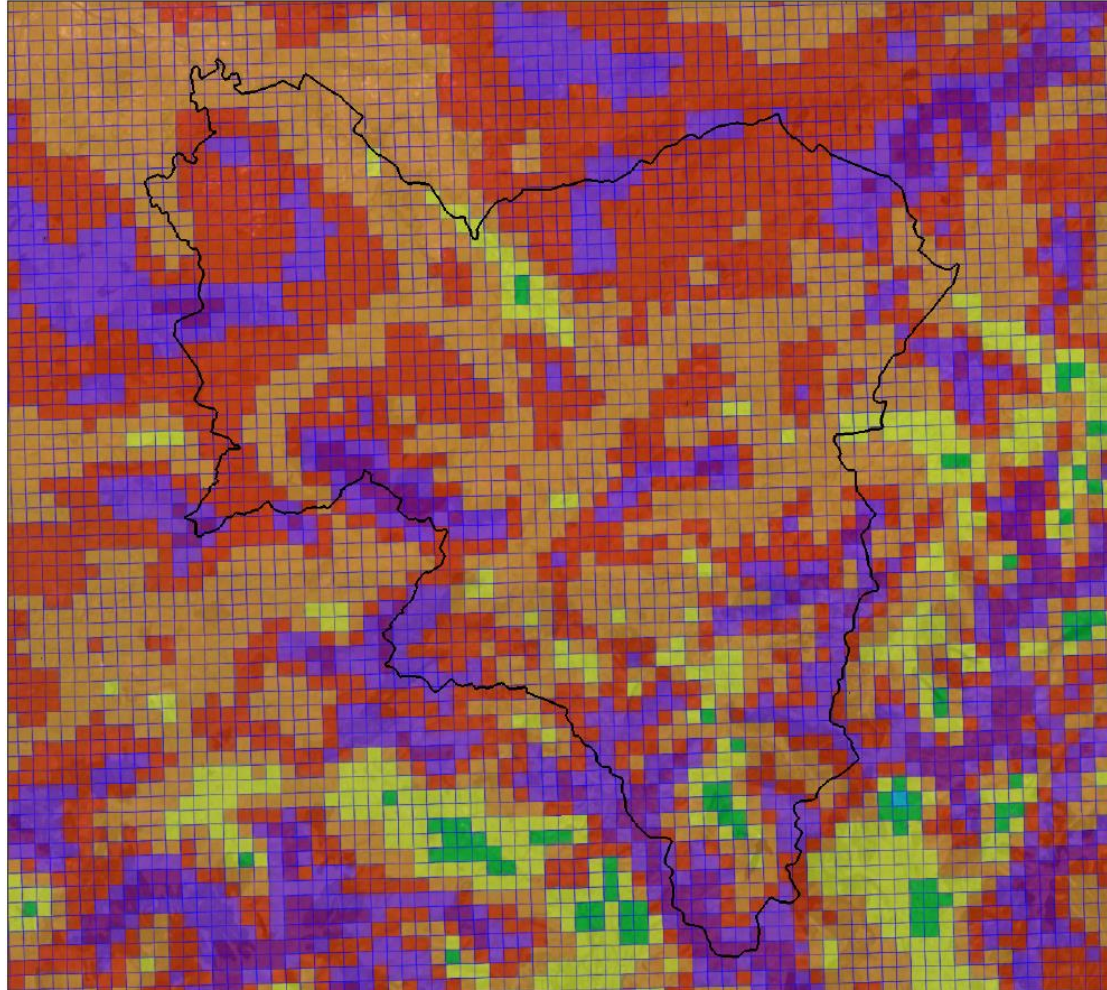


Figure 1.2
Wind Resource Assessment
(at 45m above ground level)

Site Name: South Lanarkshire

Map Key:

South Lanarkshire Council Boundary

NOABL Wind Speed Assessment (meters per second):

3.1 - 4.0

4.1 - 5.0

5.1 - 6.0

6.1 - 7.0

7.1 - 8.0

8.1 - 9.0

> 9.1

Source of Data: Google Earth Pro, NOABL

Information on this map is directly reproduced from digital and/or other georeferenced material from a wide variety of sources. Minor discrepancies may therefore occur and ASC Renewables Ltd accepts no responsibility for the accuracy of data supplied by third parties.

Version 1.0
Project Code: CO33
Date: 28.05.2014
Prepared by: TK
Reviewed by: RB

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Stage 1 Assessment

Key Environmental And Landscape Designations

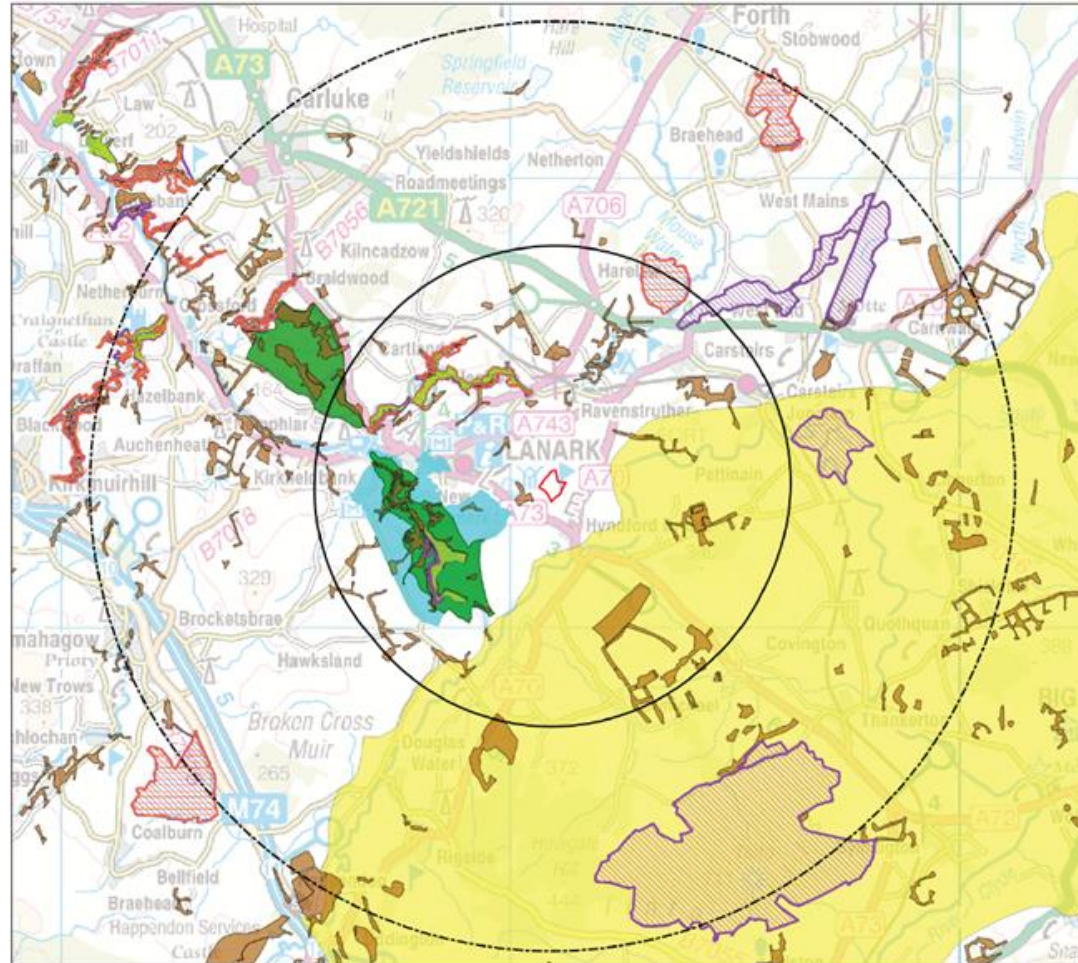


	
Figure 3.2.2 Landscape & Environmental Designations Assessment	
Site Name: 021	
Map Key: <ul style="list-style-type: none"> Site Boundary 5km Assessment Zone 10km Assessment Zone National/Local Nature Reserves Gardens & Designated Landscapes Country Parks Sites of Scientific Special Interest Special Area of Conservation Ancient Woodland World Heritage Sites Southern Uplands Foothills / Pentland Hills 	
OS Map: 1:250 000 Scale Colour Raster Grid Title: NS	
Source of Data: ASC Software	
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Stage 1 Assessment

Proximity of Residential Dwellings

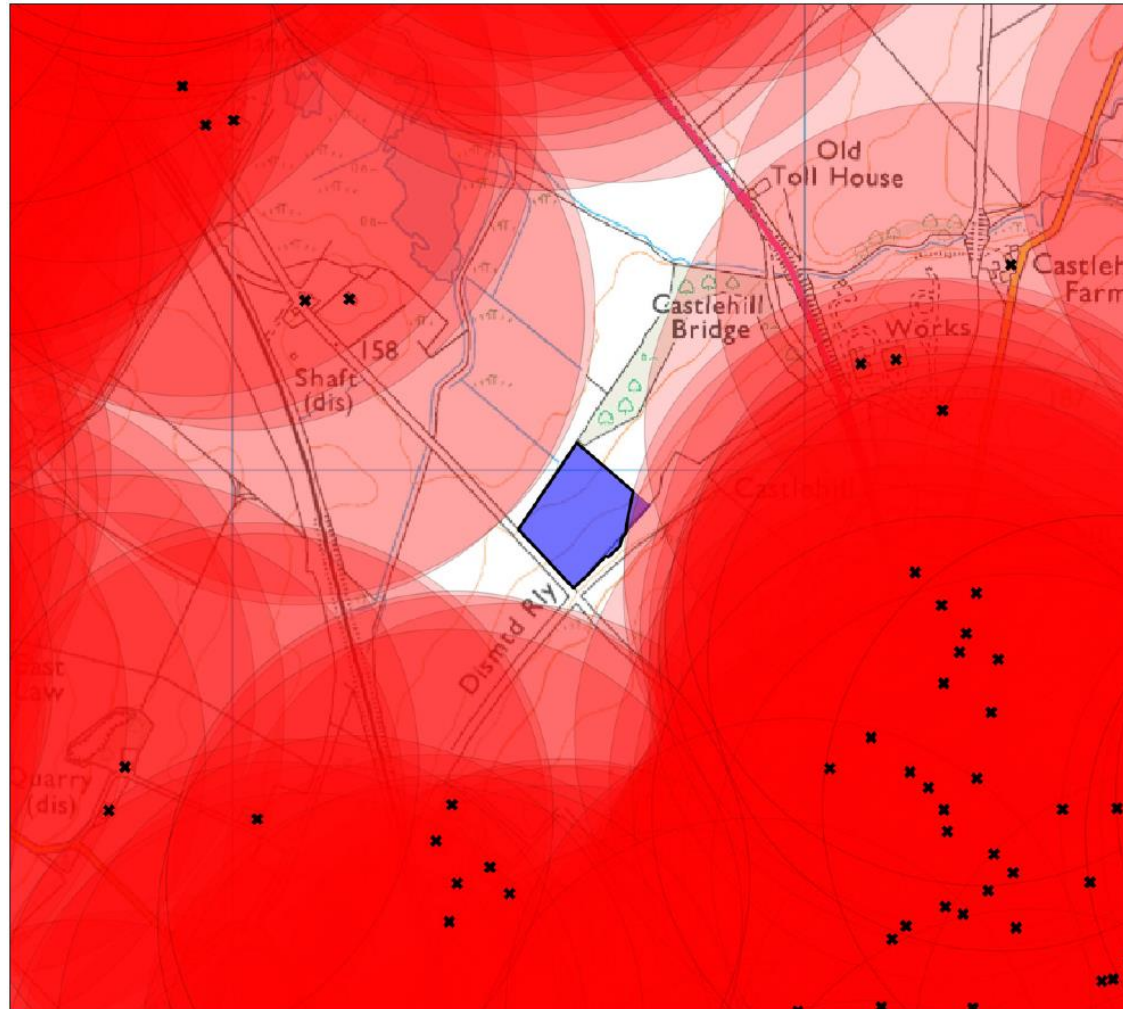






Figure 1.16
Potential Development Area
Site: 016

Site Name: 016

Map Key:

-  Potential Development Area
-  Council-owned Assets
-  Residential Dwellings
-  Residential Dwellings Buffer - 500m

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OS Map: 1:25 000 Scale Colour Raster
Grid Title: NS85

Source of Data: ASC Software

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Stage 2 Review

- Proximity of Roads;
- PRow, Bridle paths;
- Waterbodies;
- Topography;
- Civil Aviation Interests;
- Military Aviation Interests;
- Seismic Monitoring Stations;
- AONB, SPA, SAC, RAMSAR;
- National Parks, NNR, SSSI's;
- World Heritage Sites (WHS);
- Registered Parks & Gardens;
- SAM's and Listed Buildings.

Stage 2 Assessment



Figure 3.9
Site Specific
Constraints Assessment

Site Name: L5

Map Key:

-  Potential Development Area
-  Footpaths with 110m Buffer
-  M62 with 110m Buffer
-  Bridleways with 200m Buffer
-  Railway with 110m Buffer
-  Watercourses with 50m Buffer
-  Power Lines with 110m Buffer
-  Indicative Fixed Link Micropath - 10GHz Fresnel Buffer

OS Map: 1:25 000 Scale Colour Raster
Grid Tile: SD80, SD81

Source of Data: ASC Software

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Stage 3 Analysis

- Residential Amenity
- Noise
- Shadow Flicker
- Infrastructure
- Hydrology
- Ground Conditions
- Communication Infrastructure
- Recommended Site Design
- Landscape
- Environmental Assessment
- Archaeology
- Aviation Assessment
- Grid Connection Options
- Transport & Site Access

Rochdale Site Example

20 Acre Site
owned by
Rochdale

Constraints
restricting
development

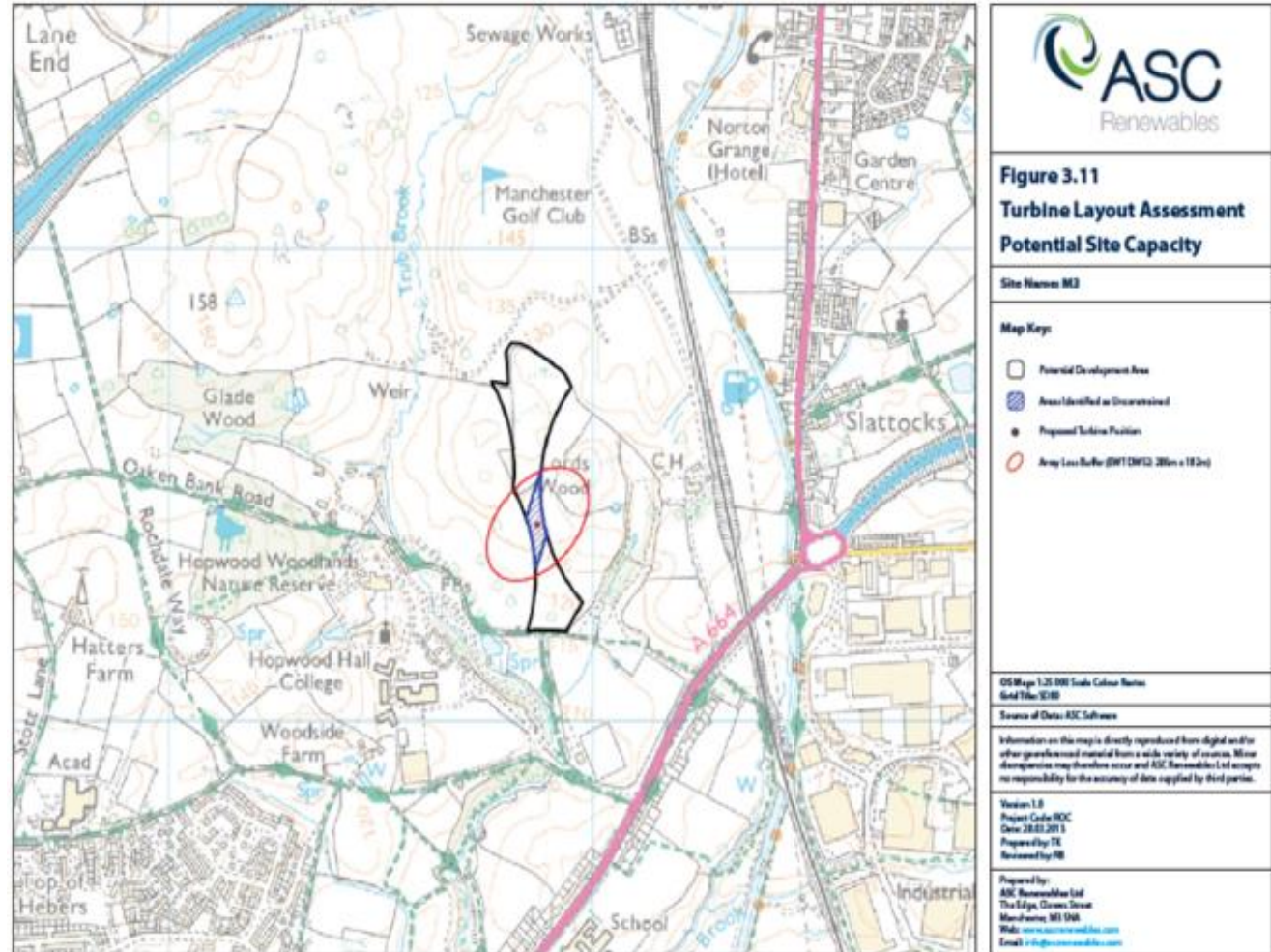
1 Acre suitable
for
development



Rochdale Site Example

1 Acre is suitable for developing a single, 500 kW wind turbine

This project has been approved and is currently being developed by Rochdale



Case Study – Rochdale Council



“Rochdale has the ambition to become the greenest Borough in the Country”

Cllr Colin Lambert

Since February 2013, Rochdale Council in partnership with ASC Renewables has:

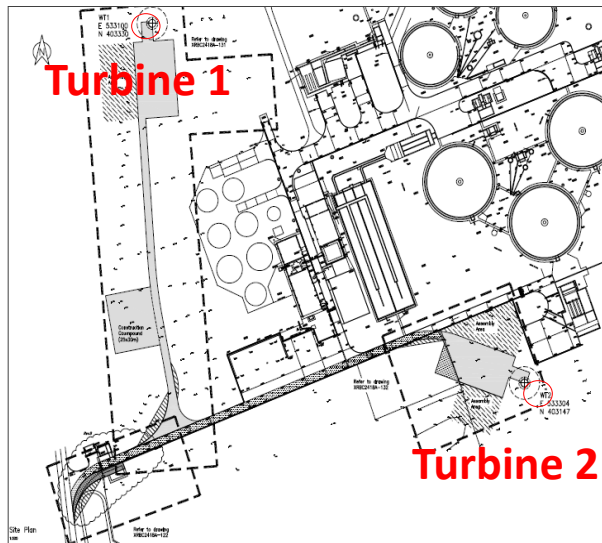
- Undertaken a wind energy feasibility assessment
- Developed a municipal wind energy business case
- Secured Cabinet approval
- Commissioned a pilot wind energy project
- Appointed ASC following an OJEU tender to develop 8 small & 3 medium scale wind projects

Case Study – Rochdale Council



March Sewage Works, Cambridgeshire: 2.3MW Wind Project

- Operational site with hosted wind energy generation
- The turbines deliver a 40% saving on the sites electricity costs



ASC Renewables' Partners



anglianwater

