

APPENDIX 2

East Ayrshire Council Windfarm Bond Assessment

East Whitelee Single Turbine Site (14/0851/PP)

**Ironside Farrar Ltd
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Strathclyde Business Park
Bellshill
ML4 3NQ**

INTRODUCTION

Ironside Farrar Ltd (IFL) have been appointed by East Ayrshire Council (EAC) as Planning Monitoring Officer for a series of windfarm and associated developments. Part of this appointment includes periodic financial review of the quantum of the decommissioning and restoration bonds for these sites.

It is understood that the restoration bond is required to be in place to provide EAC with the security of funding for the removal of the East Whitelee turbine in the event that the developer / operator defaults on the requirement to remove it at the expiration of the consented operational period, or at another point during the project life requiring the removal of the turbine by EAC.

The Developer (3R Energy) has presented proposals for decommissioning the site and proposed a bond value of £27,848. At the request of East Ayrshire Council, Ironside Farrar Ltd have reviewed these costs and have also prepared our own assessment of the potential value of the restoration bond for negotiation with the East Whitelee developer.

In accordance to the planning application (Application Ref: 14/0851/PP), the site comprises of:

"Erection of 1 x ENERCON E48 800 kW wind turbine measuring 74 m to tip, plus temporary access track and crane pad."

The wind turbine is located northeast of East Whitelee Farm which is approximately 1.5 km east of Kingsford village. Access to the site would appear to be via the B769 local road and then using access tracks up to the turbine location on site.

INFORMATION REVIEW

Ironside Farrar have reviewed the following documents currently lodged on EAC Planning Register website:

- Planning Statement;
- Supporting Table of Planning Policies;
- Landscape and Visual Impact Assessment;
- Location Plan;
- Existing Photograph.

Copies of the Location Plan and the Existing Photograph along with the developer's decommissioning estimates are attached in Appendix 1.

DECOMMISSIONING PROCEDURE

There is no current experience based information on UK windfarm decommissioning costs as the majority of developments are still operating. It is however anticipated that the decommissioning process will be broadly a reverse of the construction process. For the purposes of this report, it is also accepted that some elements will be retained after completion (e.g. access roads). Decommissioning is assumed to be as follows:

- Dismantling and removal of turbine and site control unit / transformer;
- Removal of turbine foundations to 1 m below ground level;
- Reinstatement of all land affected (*we assume this to mean affected by the removal process*) and appropriate aftercare;
- Access tracks / cable tracks retained.

IRONSIDE FARRAR PRINCIPAL ASSUMPTIONS AND EXCLUSIONS

Removal of Turbine and Tower

Dismantling of the turbine by crane and removal off site to a recycling centre as intact unit.

EAC may reasonably anticipate that scrap benefit / recycling benefit will accrue to some degree, to an unknown party, and that accordingly any work carried out under the provision of the bond will need only to ensure delivery of the dismantled equipment to a (currently unspecified) recycling facility within Central Scotland.

Dismantling options include the possibility of local (on site) rendering of the tower and other equipment into small units capable of transport via normal road vehicles. This would likely require an extended demolition / removal period and may be an option for discussion at the time that the work is required. We have at this stage assumed removal in sections approximating to those delivered for initial construction, and thus requiring abnormal load movements.

The beneficiary of the recycling / scrap value will be determined by the legal situation regarding the current or last operator of the facility. Proceeds from the turbine / tower sale / recycling are thus assumed not to accrue directly to EAC in the event of call in of the bond. (It is also unclear what the scrap value would be 15 - 25 years in the future.) It is assumed therefore for the purposes of this calculation that this value is nil.

Costs for Craneage are based on previous estimates prepared by IFL for multiple turbine sites. As only one turbine requires to be removed mobilisation costs will be more significant and also productivity / output much lower. As a result crane costs are significantly higher than previously estimated.

Removal of Sub Station / Control Building

It is assumed that there is only a small electrical cabinet on site (in accordance to similar size turbines) and all other high voltage equipment is considered to be integral to the turbine.

Turbine Foundations

Dimensions of the turbine foundations are not provided by the developer and therefore foundation size is assumed to be the same as indicated in the developer's decommissioning matrix. This would be broken out, removed entirely off site and reinstated with topsoil and seeded. The adjacent hardstanding area of around 938 m² is assumed to be topsoiled over and seeded (no information on crane pad size supplied by the developer).

Civil Engineering Site Works

There will be a degree of civil engineering work required to ensure that the road and track access to the turbines is appropriate for the heavy lifting and transport plant that will be required. The work required will be dependent in a large part upon the time that may have elapsed (if any) from cessation of operations to start of dismantling works. In normal operating circumstances, we understand that access tracks and crane pads are maintained at a reasonable to good level of readiness in order to allow repair and maintenance operations; it is not possible to estimate accurately though how much work may be required to facilitate a full dismantling operation.

Our allowances are stated, but should be understood to be simple budget figures. Agreement and detailed consideration of this with the current developer is recommended.

In the absence of any information at this stage, an allowance of £50 / m for additional works to the access tracks has been made.

Aftercare

Aftercare is assumed to be minimal given the small scale nature of the works. Some allowance has also been made for monitoring the site following decommissioning.

Works Not Required to be Costed

The following items have not been included in our costs as they are not anticipated to be required. EAC will need to confirm this before concluding developer agreements.

- Removal of access roads (other than soil spreading and seeding to crane hardstanding areas);
- Removal of cable tracks;
- Removal of watercourse crossings;
- Removal of ducts and drainage pipes;
- Reinstatement of construction site laydown is assumed to have been reinstated fully by the time the bond works are required.

DECOMMISSIONING COSTS

Decommissioning costs are detailed in Appendix 2 and summarised below:

Preliminaries / Overheads / Fees:	£31,346
Site Restoration:	£12,819
Dismantling, removal and disposal of 1 nr turbine:	£63,778
Aftercare:	<u>£1,769</u>
Grand Total	<u>£109,712</u>

COMMENTARY ON DEVELOPER COSTS

3R Energy have prepared their own valuation of site decommissioning and reinstatement costs, a copy of which is included in Appendix 1. This costs the decommissioning at £27,848.

IFL have reviewed 3R Energy costs and believe that there are several key items that haven't been included in 3R Energy's cost estimates and should be adjusted in this instance:

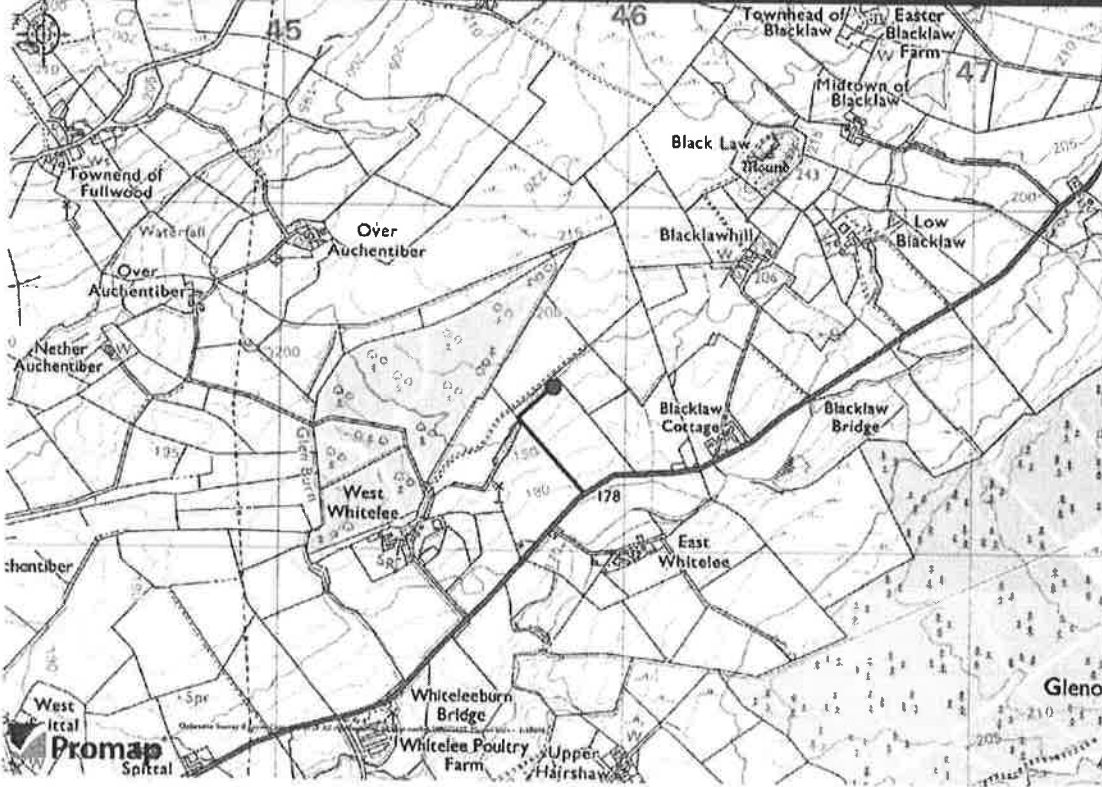
- **Access Road and Crane Pad Repairs:** - No allowances have been included by 3R Energy. It is considered that while the access track will receive a level of maintenance during the operation phase, it will inevitably deteriorate with time. As the decommissioning process will require crane access equivalent to the original build process, it is anticipated that upgrading of these roads will be required due to weathering and general use. The exact figure is difficult to quantify in advance and is largely dependent on the level of actual maintenance carried out. This figure in particular should be reviewed regularly through the lifespan of the bond. Our allowance at present is a nominal £50 / m as stated previously in this report.
- **Preliminaries / Overheads:** - 3R Energy have made an allowance of £2,550 for site preliminaries. IFL believe that this would not be a sufficient amount to cover all the necessary arrangements such as: site establishment, power, welfare facilities, insurance and supervision required to complete the works. Furthermore, there are no specific contingency allowances in 3R Energy's matrix. A contingency allowance for any Civils contract is included as standard. Given that the site will be in an unknown condition when the bond is called in, this figure should be included in 3R Energy cost allowances.
- **Aftercare:** - No aftercare allowance has been included by 3R Energy. IFL consider that allowances for maintenance works, replanting failed areas and monitoring the site's establishment would be required in order to restore the site.
- **Transportation:** - IFL have assumed that the turbine would be dismantled as intact units and considering the size of the turbine have allowed for abnormal load trips to the disposal point. 3R Energy have made smaller allowances and have most likely estimated transportation costs assuming normal load trips. IFL believe that this should be reviewed and adjusted accordingly.

Charlie Griffiths
Ironside Farrar
03 April 2015

APPENDIX 1

Site Location Plan
Existing Photograph
Developer Estimates

EAST WHITELEE FARM, EAST AYRSHIRE



Map Key:

- Proposed ENERCON E48 800kW turbine (74m to blade tip, 48m rotor diameter)
Coordinates: E245788 N649478
- ▬ Proposed access track

Client:
 Jim Barr
 East Whitelee Farm
 Stewarton
 East Ayrshire
 KA3 5JU

Location Plan

Scale (at A4) 1:15000

Prepared by:

SUE HUDSON PLANNING LTD 



Viewpoint 1: An entrance to Eakshouse of Wistoleo from 8749 Easting Photograph

	Viewpoint Grid Reference: 245052, 348802 Viewpoint Altitude: 120ft Approx Distance to Proposed Turbine: 7.5km Proposed turbine Altitude by Height: 24.0m Proposed turbine Altitude by True Altitude: 24.0m Proposed turbine Hub Altitude by True Altitude: 24.0m	Recommended Angle of View: 90 degrees Recommended Viewing Distance: 250m Height of Camera above ground: 1.4m Date of Photography: 11/07/2014 Time of Photography: 12:30 Weather Conditions: Bfghl	eakshouse easting photograph 8749 Easting 245052, 348802 1.4m 24.0m 24.0m 24.0m 11/07/2014 12:30 Bfghl www.eakshouse.com 8749 Easting		AP: East Wistoleo West Turbine	AP: East Wistoleo Planning MS
	Viewpoint 1: An entrance to Eakshouse of Wistoleo from 8749 Easting Photograph	AP: East Wistoleo Planning MS	AP: East Wistoleo Planning MS	AP: East Wistoleo Planning MS	AP: East Wistoleo Planning MS	AP: East Wistoleo Planning MS

Site Name - Erection of Wind Turbine, East Whitelee, Stewarton

Application No. 14/0851/PP



Decommissioning and Restoration Bill of Quantities

Item	Quantity	Unit	Rate £	Total cost £
1. Access Track				
Allowance for reinstatement of access track. Note: Access track will remain permanently in situ for farmfield access	N/A	N/A	N/A	N/A
2. Plant Requirements				
Crane Hire: 100 tonne crane	4	day	1,412.00	5,648.00
3. Civil Works				
Breakout foundation slab and substation plinth	2	day	550.00	1,100.00
Remove and dispose of concrete	100	m3	20.50	2,050.00
Remove and dispose of GRP substation housing	2	day	250.00	500.00
4. Electrical Works				
Disconnect electrics and fibre connections	3	day	350.00	1,050.00
Remove electrical supply cable from grid, DNO Scottish Power	2	day	350.00	700.00
5. Turbine Removal				
Turbine disassembly 3 x engineers	5	day	600.00	3,000.00
Break down of turbine, incl cutting of tower	5	day	600.00	3,000.00
Dispose of turbine blades	2		450.00	900.00
Dispose of tower, cables and electrical components	3		750.00	2,250.00
Preliminaries	1		2,550.00	2,550.00
6. Site Restoration				
Restore foundation slab with subsoil / topsoil and reseed	200	m3	8.50	1,700.00
Restore crane pad / laydown area and fill with locally won soil and reseed	400	m3	8.50	3,400.00
			TOTAL	£27,848.00



APPENDIX 2

IFL Decommissioning Cost Breakdown

Operation	Unit	Quantity	Rate	Cost
PRELIMINARIES / OVERHEADS				
Professional / Client fees	%	10	78,366	7,837
Site Preliminaries	%	20	78,366	15,673
Contingency	%	10	78,366	7,837
SUB TOTAL				31,346
SITE RESTORATION				
Turbine Bases (1 nr) 800 kW output, 50 m Hub height, 74 m Tip height				
Breakout Concrete Foundations to 1.0 m below FGL and dispose off site	m ²	91	72.79	6,624
Cover crane hardstandings (hardcore) with 150 mm topsoil as reinstatement	m ²	938	3.91	3,668
Grass seed 0.05 kg / m ²	m ²	938	1.00	938
Remove met mast	nr	0	2,000	0
Remove telecommunication mast	nr	0	500	0
External Transformers				
Disconnecting transformers	nr	1	1,000	1,000
Demolition of transformer building	m ²	8	50	400
Breakout Concrete pad to 0.2 m below FGL and dispose off site	m ²	2	72.79	146
Fill with 200 mm topsoil as reinstatement	m ²	9	3.91	35
Grass seed 0.05 kg / m ²	m ²	9	1.00	9
Sub Station Compound				
Disconnecting Sub Station	sum	0	1,500	0
Remove and dispose HV equipment	sum	0	1,000	0
Remove and dispose CCTV mast	nr	0	500	0
Demolition of Sub Station Building	m ²	0	50	0
Take down perimeter fencing and dispose off site	m	0	25	0
Removal of gate	nr	0	500	0
Removal of Compound Granular Material off site	m ³	0	45.1	0
Removal of floor slab and external concrete hardstandings off site	m ³	0	72.79	0
Fill with 150 mm topsoil as reinstatement	m ²	0	3.91	0
Grass seed 0.05 kg / m ²	m ²	0	1.00	0
Remove existing manhole	sum	0	1,000	0
SUB TOTAL				12,819
DISMANTLING				
Works to Crane Pad (938 m ² x 1 nr x 5% x 0.2 m = 9.4 m ³)				
Excavation of Soft spots allow 5% of crane pads	m ³	9.4	6.53	61
Type 1, 0.2 m deep, to fill soft spots to support 200 kN / m ²	m ³	9.4	31.12	293
Dispose Soft spot arisings off site (provisional item)	m ³	9.4	45.1	424
Local improvements / repairs to access tracks to allow crane access (allowance)	km	0.43	50,000	21,500
Craneage (assume 1.5 turbines / week - minimum 1 week)				
Dismantling staff (5 man team)	days	5	500	2,500
1000 T Crane Mobilisation / Demobilisation allow for Contractor escort	nr	0	20,000	0
Dismantling Turbine, assume 5 days per turbine	days	0	6,000	0
400 T Crane Mobilisation / Demobilisation allow for Contractor escort	nr	0	16,000	0
Dismantling Turbine, assume xxx days per turbine	days	0	5,000	0
250 T Crane Mobilisation / Demobilisation allow for Contractor escort	nr	1	4,000	4,000
Dismantling and Loading Turbine components, assume 5 days per turbine	days	5	2,200	11,000
SUB TOTAL				39,778
TRANSPORTATION TO POINT OF DISPOSAL				
Contractor escort per turbine	nr	0	2,500	0
Transport blades from site (abnormal load) 3 nr per turbine	nr	3	3,500	10,500
Transport Nacelle and Hub from site (abnormal load)	nr	1	3,500	3,500
Transport Tower Sections from site (abnormal load) 2 nr per turbine	nr	2	3,500	7,000
SUB TOTAL				21,000
DISPOSAL AT ASSUMED RECYCLING CENTRE (BENEFIT TO ACCRUE ELSEWHERE)				
Abnormal Load; offloading only	nr	6	500	3,000
SUB TOTAL				3,000
AFTERCARE				
Maintenance of seeding / planting areas	%	10	947	95
Allowance for replanting / seeding failed areas	%	25	947	237
Attendance contractor costs for miscellaneous repairs to culverts, reinstated areas etc	sum	1	500	500
Hydrological assessment of decommissioning process	sum	0	10,000	0
Monitoring of decommissioning process - allow single visit	day	0.5	500	250
Year 1 Environmental monitoring and reporting - allow single visit	day	0.5	500	250
Year 2-5 Environmental monitoring - allow single visit	day	0.5	500	250
EAC Project Officer Costs	%	25	750	188
SUB TOTAL				1,769
GRAND TOTAL				109,712
Cost per turbine	nr	1		109,712