
**CARBON MANAGEMENT: PROVISIONAL FULL BUSINESS CASE
WIND TURBINE AT GLENGORM LANDFILL SITE**

1.0 EXECUTIVE SUMMARY

- 1.1 At its meeting on 21 March 2013, the Council approved a budget to progress the development of business cases for biomass and renewables sourcing. This report outlines the work undertaken in relation to wind and seeks approval for a single wind turbine at Glengorm Landfill site on Mull.
- 1.2 The Glengorm site has been through an ongoing assessment process which has enabled us to identify it as a suitable location for a wind turbine. Planning permission for a wind monitoring mast was granted in July 2015, grid connection confirmed in June 2015 and planning permission for the wind turbine itself was granted in September 2015.
- 1.3 Also during this time, the Department for Energy and Climate Change (DECC) have put forward various changes to the Feed In Tariff (FIT) which led us to pre-accredit the wind turbine for FIT in September 2015. Whilst this is beneficial in relation to the financial return on the project it also places a time limit on construction requiring that the wind turbine should be operational by September 2016, after this date a lower FIT rate is expected although the payback period should still be within the lifetime of the turbine. In view of the timing requirement set by the pre-accreditation for FIT, it is necessary to seek an alternative approach to approval of the Full Business Case/acceptance of tenders with the two processes running concurrently and to put forward an option to delegate authority to the Executive Director of Customer Services in consultation with the Leader, Deputy Leader and Leader of the Main Opposition to accept the tenders on the basis that they fall within a payback period within the working life of the turbine. It is also necessary to commence preparatory work immediately to enable the programme of works to be completed in sufficient time for the commissioning of the wind turbine before the September 2016 deadline.
- 1.4 The Provisional Full Business Case for the wind turbine is shown in Appendix 2. A summary of the scoring is summarised in the following table:

Criteria	Glengorm Wind Turbine	Post Sept 16
FBC Impact Score	90% (45/50)	
FBC Affordability Score	64% (16/25)	
FBC Deliverability Score	80% (9.99/12.5)	
FBC Risk Score	80% (10/12.5)	
FBC Overall Score	81% (80.99/100)	80% (79.99/100)
FBC Overall Rating	4(maximum)	4(maximum)
Funding Required	£404,680.24*	£404,680.24*
Net Annual Saving	£33,665.00**	Max. £21,165.00**

Payback period	12 years	Min. 19 years
Working life of major plant	20+ years	20+ years
Annual Carbon Reduction	92.4 Tonnes	92.4 Tonnes

* Estimated tender costs plus additional internal and external fees including contingency.

** Including estimated annual maintenance charges

1.5 The Provisional Full Business Case for the Glengorm Wind Turbine achieves the highest possible rating of 4 in accordance with the Councils Capital Programme Planning and Management Guide.

1.6 If the turbine is not commissioned by 30 September 2016, the Feed in Tariff is expected to be reduced to a maximum of 8.33p/kwh which would reduce the overall FBC score to 79.99/100 and increase the payback period to 19.1 years, within the lifetime of the turbine.

RECOMMENDATIONS

1.7 The Council is asked to:

- (i) Note the annual carbon savings expected to be in the region of 92.4 tonnes per annum.
- (ii) Note that the Provisional Full Business Case estimates that additional prudential borrowing capital funding of circa £404,680 is required for the wind turbine at Glengorm Landfill Site to proceed to the implementation/delivery stage and that this will be funded through the annual savings.
- (iii) Note that the Provisional Full Business Case estimates a payback period of 12 years for this additional borrowing to complete the installation of the wind turbine assuming completion by September 2016.
- (iv) Agree that based on the Provisional Full Business Case (impact, affordability, deliverability and risk) for the wind turbine, delegated authority be afforded to the Executive Director of Customer Services to accept tenders on behalf of the Council for the installation of the wind turbine at Glengorm Landfill Site in consultation with the Leader, Deputy Leader and Leader of the main Opposition. The Executive Director will only have the delegated authority to approve the tenders subject to the final Full Business Case presenting a payback period of less than the working life of the turbine. The final Full Business Case will be informed by the tender documents as well as onsite wind monitoring which is currently underway.
- (v) Note that should the turbine be commissioned post September 2016 the payback period will be increased to circa 19 years but that the commissioning date cannot be confirmed until part way through the project when costs will have been incurred.

- (vi) Agree that the preparatory works listed in Appendix 1 can be commenced immediately in order to meet the September 2016 deadline for commissioning of the turbine.
- (vii) Note that an update paper will be presented to Policy and Resources Committee in May 2016 to confirm the progress made with installation.

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2.0 INTRODUCTION

- 2.1 At its meeting on 21 March 2013, the Council approved a budget to progress the development of business cases for biomass and renewables sourcing. The background for this expenditure was the Council's Carbon Management Plan which identified a target of a 20% reduction (8,943 tonnes CO₂) in the Council's carbon footprint by March 2014. At the time of the 2013 report, over 4,000 tonnes of CO₂ had been reduced however additional projects, including renewables projects identified through the Renewable Sourcing Strategy, were required to further reduce CO₂. In addition to the carbon savings, the projects offered the opportunity to reduce energy costs and in some instances generate income.
- 2.2 Since that point Development and Infrastructure Department alongside Customer Services Department have been working on a number of projects focused on delivering solar, biomass, wind and hydro renewables. A number of solar and biomass projects have been progressed and installed across Council premises as has previously been reported to Council. This report outlines the work undertaken in relation to wind and proposals for a single turbine to be erected at Glengorm Landfill Site on the Isle of Mull.
- 2.3 The development of the Renewable Sourcing Strategy, as well as the planning application and Business Case for Glengorm, has been supported by the Council's appointed consultants Locogen. Locogen is both a renewable energy developer and consultancy. As well as developing and operating a small portfolio of wind and biomass assets they have an experienced team of professional project managers, engineers and environmental consultants with extensive knowledge in the renewable energy design, consenting and construction sector.
- 2.4 The Renewable Sourcing Strategy reviewed approximately 1,100 assets owned or believed to be owned by the Council against the four renewable technologies (solar, biomass, wind and hydro). Facility Services staff reduced this to 194 assets with renewable technology potential using agreed filtering criteria set down within the RSS. This process was carried out using the widest possible parameters and assuming adjacent land was owned by the Council if boundary information was not available at the time of assessment.
- 2.5 A more detailed desk based assessment of each of these 194 projects was carried out by Locogen. This considered planning; environmental or electricity grid constraints; suitable technology size; available natural resource; annual energy generation; on-site energy consumption and potential export; site longevity issues; capital costs; payback period; return on investment; and carbon savings. Each opportunity was then scored/ranked using the agreed Key Benefits Criteria, resulting in a reduced list of 102 assets which were most suitable for

renewable technologies.

- 2.6 The 102 shortlisted sites included 52 potential wind turbine projects. 20 of these sites were located on school premises and were discounted due to safety concerns. A further four sites could not be progressed because the potential was on land outside the Council's ownership. Of the remaining sites, nine were selected for initial assessment; the remaining 19 sites could still be assessed once the boundaries of the sites have been confirmed. The nine sites assessed were:

Site	Progress?
Moleigh Landfill, Oban	Not progressed due to landscape impact and planning risk. Also complications due to lease to Shanks.
Lingerton Landfill, Lochgilphead	Not progressed due to landscape impact and planning risk. Also complications due to lease to Shanks.
Dalinalongart Landfill, Dunoon	Not progressed due to poor wind resource, access and anticipated planning difficulties. Also complications due to lease to Shanks.
Glengorm Landfill, Mull	SMT agreed to proceed. Planning consent and grid consent in place.
Kilmory Farm Estate, Lochgilphead	The site is believed to have potential for wind but this is reliant on the Forestry Commission, who own adjacent land, felling the areas of mature forestry to ensure that the expected wind resource can be realised. Access is also an issue.
Coll Airport	Upon investigation it was discovered that the Council did not own the site and the lease restricted it to use as an airstrip.
Oban Airport	Not progressed due to potential impact on airport operations and proximity to dwellings.
Colonsay Airport	Upon investigation it was discovered that the Council did not own the site and the lease restricted it to use as an airstrip.
Westlands Farm, Bute	The site has good potential for wind energy but is let out on an agriculture tenancy. The tenant farmer indicated that he would not agree to an amendment to the lease for the erection of the turbines.

One project, for a single wind turbine at Glengorm Landfill site on Mull, has been progressed and we are now seeking approval of this provisional full business case to enable the development to proceed.

3.0 RECOMMENDATIONS

The Council is asked to:

- 3.1 Note the annual carbon savings expected to be in the region of 92.4 tonnes per annum.
- 3.2 Note that the Provisional Full Business Case estimates that additional prudential borrowing capital funding of circa £404,680 is required for the wind turbine at Glengorm Landfill Site to proceed to the implementation/delivery stage and that this will be funded through the annual savings.
- 3.3 Note that the Provisional Full Business Case estimates a payback period of 12 years for this additional borrowing to complete the installation of the wind turbine assuming completion by September 2016.
- 3.4 Agree that based on the Provisional Full Business Case (impact, affordability, deliverability and risk) for the wind turbine, delegated authority be afforded to

the Executive Director of Customer Services to accept tenders on behalf of the Council for the installation of the wind turbine at Glengorm Landfill Site in consultation with the Leader, Deputy Leader and Leader of the main Opposition. The Executive Director will only have the delegated authority to approve the tenders subject to the final Full Business Case presenting a payback period of less than the working life of the turbine. The final Full Business Case will be informed by the tender documents as well as onsite wind monitoring which is currently underway.

- 3.5 Note that should the turbine be commissioned post September 2016, the payback period will be increased to circa 19 years but that the commissioning date cannot be confirmed until part way through the project when costs will have been incurred.
- 3.6 Agree that the preparatory works listed in Appendix 1 can be commenced immediately in order to meet the September 2016 deadline for commissioning of the turbine.
- 3.7 Note that an update paper will be presented to Policy and Resources Committee in May 2016 to confirm the progress made with installation.

4.0 DETAIL

- 4.1 The Glengorm site has been through an ongoing assessment process which has enabled us to identify it as a suitable location for a wind turbine. Initial desk based assessments considered site conditions, wind resource, planning considerations and the risks associated with progressing a renewable energy proposal at this location. Following investigations, discussions with statutory bodies and amendments to the proposals, an outline business case was prepared and submitted to the Strategic Management Team (SMT) for consideration. The figures contained within the outline business case indicated that the project was worthwhile progressing and following approval from SMT we commenced the initial stage of obtaining the relevant consents. The costs associated with obtaining these consents are detailed in Appendix 1 and have been met by the budget approved at Council in March 2013. The expenditure has been necessary to confirm the principle of the development which is required for this provisional Full Business Case.
- 4.2 In May 2015, we submitted a planning application for a wind speed monitoring mast. The erection of a wind monitoring mast onsite will enable us to gain a better understanding of the wind speeds and confirm the assumptions on wind resource which have been used to create this provisional Full Business Case. Planning permission for the mast was granted in July 2015 and the mast was erected in November 2015. The wind speed monitoring is ongoing and will continue until such time as the wind turbine is erected. The data will be used to inform the final Full Business Case to be approved by the Executive Director.
- 4.3 Alongside the preparations for the planning application for the monitoring mast, we also submitted an application to Scottish and Southern Energy Power Distribution to connect the proposed turbine to the local grid. This is required so that excess power not used onsite can be exported and the benefit of the Feed In Tariff (FIT) payment received. We received an offer of a 50 kW grid connection during May 2015 and accepted this during June 2015. Due to constraints on the local grid, the maximum export allowed is 50 kw, it is therefore proposed that the export will be limited to this however when there is

demand for electricity onsite the turbine will operate up to its maximum of 60 kW.

- 4.4 With planning permission in place for the monitoring mast and the grid connection consented, the next stage was to progress with the planning application for the wind turbine itself. We submitted the planning application in August 2015. Local elected members, who had been informed of the wind monitoring mast application, were also updated regarding the submission of the turbine application.
- 4.5 During the period of preparing the planning application for the wind turbine, the Department for Energy and Climate Change (DECC) were consulting on proposed changes to the Feed In Tariff (FIT), the subsidy payment for small scale renewables such as the proposed wind turbine. In September 2015, DECC confirmed that they would be removing the ability to pre-accredit renewable developments from 30 September 2015. The ability to pre-accredit enables those developing renewables to lock into the FIT at the current rate (FIT rates reduce on a quarterly basis). Without pre-accreditation in place, the developer will get the FIT at the time that the renewable is first commissioned.
- 4.6 Alongside the removal of pre-accreditation for FIT, DECC were also consulting on proposed changes to FIT payments which proposed significantly reduced FIT for most types of renewables. The lower level of FIT proposed through the consultation would have a detrimental impact on the business case (although the project would still be viable, the income received would be much lower) and therefore it was important that pre-accreditation was achieved.
- 4.7 In order to pre-accredit for FIT, it is necessary to have both planning permission and grid connection confirmed. We received planning permission in September 2015 and were able to pre-accredit the wind turbine before the end of September. Whilst pre-accreditation significantly improves the financial return on the project it also places a time limit on construction requiring that the wind turbine should be operational by September 2016 which means that some elements of the development process are having to run concurrently.
- 4.8 Wind turbine installation projects are classified as Strategic Change and as a result there is a requirement for their Full Business Case to be approved by Council prior to tender acceptance to comply with the Council's Capital Programme Planning and Management Guide.
- 4.9 In view of the timing requirement set by the pre-accreditation for FIT, it is necessary to seek an alternative approach to approval of the Full Business Case and acceptance of Tenders with the two processes running concurrently. Should Council approve the proposals to progress this project we will also commence smaller scale preparatory works so that the project can proceed in a timely manner.
- 4.10 We have commenced the procurement work associated with the turbine and tenders are expected to be returned during February 2016. Thereafter they have to be evaluated and wind speed monitoring data assessed prior to completion of the Full Business Case. This work cannot be completed in sufficient time to enable the finalised Full Business Case to be considered and approved by the January Council meeting; it is expected to be completed in March 2016. The project will only progress where there is Council approval at this meeting and the Final Full Business Case, following the return of the

tenders, indicates a payback period which is less than the lifetime of the turbine.

- 4.11 To delay Council consideration until the April 2016 meeting would have significant impact on the procurement and installation of the turbine within the required timeframe which might ultimately result in the pre-accredited FIT rate being missed. It is therefore of utmost importance that this project is allowed to proceed in a timely manner if we are to secure the higher FIT rate.
- 4.12 To address this issue there is an option to delegate authority to the Executive Director of Customer Services to accept the tenders on the basis that they fall within a payback period which is less than the lifetime of the turbine. This would be in consultation with the Leader, Deputy Leader and Leader of the main Opposition and would be required to ensure that the savings associated with the turbine would cover the costs of installation and the additional borrowing and would also realise the identified carbon savings. If the project can be delivered by September 2016, the project is also expected to generate in the region of £250,000 income over the life time of the turbine once the borrowing costs have been paid.
- 4.13 As a result of the limited timescale for construction of the turbine, it is also necessary to continue with some of the preparatory works immediately. This is required to enable the programme of onsite works to be commenced as soon as the procurement and finalised full business case approval will allow. It is expected that we will be able to place orders during March and that construction can therefore be completed in sufficient time for the commissioning of the wind turbine before the September 2016 deadline.
- 4.14 The Provisional Full Business Case for the wind turbine, based on commissioning prior to 30 September 2016, is shown in Appendix 2 and has been scored by the Asset Management Board. A summary of the scoring is summarised in the following table:

Criteria	Glengorm Wind Turbine	Post Sept 16
FBC Impact Score	90% (45/50)	
FBC Affordability Score	64% (16/25)	
FBC Deliverability Score	80% (9.99/12.5)	
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Net Annual Saving	£33,665.00**	Max. £21,165.00**
Payback period	12 years	Min. 19 years
Working life of major plant	20+ years	20+ years
Annual Carbon Reduction	92.4 Tonnes	92.4 Tonnes

* Estimated tender costs plus additional internal and external fees including contingency.

** Including estimated annual maintenance charges

The payback period is calculated utilising a simple analysis based on the ratio

of capital investment required to complete the installation of the turbine to net annual revenue savings (electricity cost savings plus FIT income and export value less maintenance costs). Maintenance costs have been estimated but, as with the funding requirement, this will be confirmed through the procurement process and factored into the final business case for approval by the Executive Director.

- 4.15 The Provisional Full Business Case is scored using the assessment criteria and weightings as agreed by the Strategic Assessment Management Board and indicated in Appendix 3. The overall score is then rated in accordance with the following table.

Business Case Score	Rating
80% -100%	4 (Max.)
70% - 79%	3
60% - 69%	2
Less than 60%	1 (Min.)

Full Business Cases should attain a rating of 4 for them to be considered for progression to the implementation stage.

Implications of late delivery

- 4.16 Current project timelines indicate that delivery within the deadline is achievable however this type of project is complex and delays may be experienced, this increases the risks associated with proceeding. If delays are experienced in the delivery, installation or commissioning of the turbine it may mean that it is not possible to complete the project by September 2016 and therefore secure the FIT rate which was agreed through pre-accreditation. The pre-accredited rate is 14.45p/kWh which is expected to rise to 14.67p/kWh due to an inflation increase at 1.5% from April 2016.
- 4.17 Following publication of the DECC consultation response on FIT, is expected that FiT will be retained but that there will be reductions. If the wind turbine was ready to be commissioned in the period October-December 2016 and the FIT levels identified in the DECC document are implemented, the maximum FIT payment which could be expected would be 8.33p/kw (although this could be reduced if take up of wind at this scale is higher than expected by DECC as supplementary depression could be imposed).
- 4.18 The main risk associated with the financial aspect of the project is that the turbine will be commissioned after the September 2016 pre-accreditation deadline. This would result in a reduction in the FIT to 8.33p/kwh which would reduce the expected FIT income from £29,340/annum to £16,640/annum. If this lower rate of FIT was achieved it is expected to increase the payback period for the additional borrowing to around 19 years (21 years for the total project cost). The costs of constructing the turbine are still expected to be covered through the FIT, export tariff and electricity savings within its lifetime however there is unlikely to any surplus income generated. Details of how the lower FIT affects the returns are contained in Appendix 1. If reassessed through the Asset Management Board, we are advised that based on the reduced FIT income the overall score would reduce by one percentage point from 80.99/100 to 79.99/100 (although this may be increased to above 80% as some of the risks associated with the project would also have reduced and which would also affect the scoring).

- 4.19 The short timescale for implementation of the turbine increases some of the risks associated with the project however we are aiming to manage these to the best of our ability in an attempt to protect the Council and mitigate the impacts should such delays occur. The procurement specification requires tenderers to submit not only confirmation of costs but also a programme of timescales associated with the project. We have requested that the turbine is commissioned 4 weeks in advance of the FIT pre-accreditation deadline to build in some scope to accommodate minor delays and we will have the opportunity to review the tenderers proposed work programme before placing an order to ensure that we consider it is realistic. In addition delay damages, should key milestones be missed, will be included within the contract. This element will help to mitigate some of the revenue losses which would be incurred should the delays result in the FIT pre-accreditation deadline being missed.
- 4.20 An early requirement in the procurement contract will be to order the turbine and pay the required non-refundable deposit, which is expected to be in the region of 20% of the value of the turbine. This together with required design and civils work will mean that significant costs will be incurred before it can be confirmed whether the September 2016 deadline can be met. For this reason, it will not be possible to confirm the final payback period until the turbine is commissioned. We are therefore seeking approval to progress on the basis that the payback period is expected to be within the lifetime of the turbine.
- 4.21 We will also include within the contract appropriate breaks in an attempt to minimise any abortive costs should it be necessary that work on the project ceases.
- 4.22 We will attempt to mitigate risks as much as possible however whilst we would endeavour to implement a contract which protects the Council from delays and seeks to ensure that the wind turbine is delivered in a timely manner, the Council should be aware that there may be circumstances which result in failure to meet the September 2016 deadline and the longer payback period being realised.
- 4.23 Should the Council approve the recommendations within this report there would still need to be a number of approvals given before the project could proceed. At each stage we would have the opportunity to review the information available, consider how this impacts the business case and whether the project should proceed. We would expect key milestones to be:

Stage	Action	Anticipated date
Final full business case	Approval by Exec Director, Leader, Deputy Leader and Leader of main Opposition	March 2016
Approval of turbine construction contract	Approval by Exec Director	March 2016
Receipt of pre-construction documentation from contractor	Review by Exec Director	April –May 2016
Payment of turbine deposit	Approval by Exec Director	May 2016
Section 1: The design of the Works and provision of the pre-construction Contractor's Documentation	Approval by Exec Director	June 2016
Section 2: Construct the wind turbine foundations and prepare the site for the wind turbine delivery	Approval by Exec Director	July 2016

Section 3: Deliver the wind turbine to Site	Review by Exec Director	August 2016
Section 4: Install and commission the wind turbine, connect to the grid, carry out the G59 witness test and provide a valid commissioning certificate and G59 test certificate to the Employer	Review by Exec Director	September 2016

4.24 It would not be possible to remove the risks from this project however an appropriately constructed contract and a clear work programme will help to manage the risks and enable us to highlight when delays are impacting delivery. In order to meet these tight deadlines continued support will be required from officers across Economic Development and Strategic Transportation, Facility Services, Roads and Amenity Services and Customer and Support Services as well as the council's renewable consultant.

5.0 CONCLUSION

5.1 The Provisional Full Business Case for the Glengorm Wind Turbine achieves the highest possible rating of 4 in accordance with the Councils Capital Programme Planning and Management Guide assuming commissioning of the turbine by September 2016 at the latest.

5.2 The project offers a reduction in the Council's carbon footprint and reduced reliance on fossil fuels as well as energy savings and potentially income generation.

5.3 Excluding the costs already incurred to get to the stage of the Provisional Full Business Case, the wind turbine has an estimated payback of 12 years based on completion by September 2016. This compares to 10.2 years for the non NPDO solar projects and 12.1 years for the NPO solar projects which have been progressed.

5.4 Because of the time limits imposed by pre-accreditation, there is the risk that delaying the consideration of the full business case by Council until the tender process has been completed will not allow sufficient time to complete the installation before the September 2016 deadline. Therefore members are asked to delegate authority to the Executive Director of Customer Services in consultation with the Leader, Deputy Leader and Leader of the Main Opposition on the basis that once finalised the Full Business Case demonstrates a payback period of no more than the lifetime of the turbine. If the September 2016 deadline is not met this will impact the payback period for the turbine however it is still expected that the investment will pay for itself within the lifetime of the turbine. A reduced FIT may be received, even if the Final Full Business Case shows a payback of circa 12 years, should delays in the construction process be experienced however we will aim to manage this risk and mitigate some of the reduction in income.

5.5 The implementation of the wind turbine will be a first for the Council and it will add to the installed solar PV capacity of over 1MW. It is expected to save around 92 tonnes of carbon per annum and contribute towards the aims of the Carbon Management Plan.

6.0 IMPLICATIONS

6.1 **Policy:** Failure to deliver the projects would inhibit delivery of a 20% target

reduction in carbon emissions as contained within the Carbon Management Plan.

- 6.2 **Financial:** There is a requirement to identify additional funding from prudential borrowing of £404,680 to deliver the wind turbine and associated preparatory works. The additional expenditure associated with this project is expected to achieve a payback over 12 years if the September 2016 deadline is met, if there are delays the payback is expected to be circa 19 years if FiT is provided at the rate in the DECC FIT consultation feedback document.
- 6.3 **Legal:** None
- 6.4 **HR:** None
- 6.5 **Equalities:** None
- 6.6 **Risk:** As indicated within the risk section of the FBC, full copy provided in Appendix 3. There is a risk that if delays occur the turbine may be commissioned after the September 2016 FIT pre-accreditation deadline, this will reduce the annual FIT income however it is currently expected that if this is the case the revenue generated will cover the cost of constructing the turbine but will not generate any surplus revenue over its lifetime.
- 6.7 **Customer Service:** None

Executive Director of Development and Infrastructure Services

Policy Leads: Councillor Walsh; Councillor E. Morton; Councillor A. Morton
8 January 2016

For further information contact:

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APPENDICES

Appendix 1: Full site cost breakdown

Appendix 2: Provisional Full Business Case Glengorm Wind Turbine

Appendix 3: Risk Register