



**BUSINESS CASE  
CWM IFOR SOLAR FARM**

<b>DATE:</b>	<b>JUNE 2022</b>
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## TABLE OF CONTENTS

<b>SECTION</b>		<b>PAGE</b>
<b>1.</b>	<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>2.</b>	<b>INTRODUCTION</b>	<b>3</b>
<b>3.</b>	<b>STRATEGIC FIT</b>	<b>3</b>
<b>4.</b>	<b>EXISTING SERVICE DELIVERY ARRANGEMENTS</b>	<b>4</b>
<b>5.</b>	<b>ANTICIPATED OUTCOMES</b>	<b>4</b>
<b>6.</b>	<b>PROJECT/INITIATIVE ANALYSIS</b>	<b>4</b>
<b>7.</b>	<b>OPTIONS ANALYSIS</b>	<b>7</b>
<b>8.</b>	<b>JUSTIFICATION</b>	<b>8</b>
<b>9.</b>	<b>RISK ASSESSMENT</b>	<b>8</b>
<b>10.</b>	<b>PROJECT OVERVIEW AND OUTLINE PLAN</b>	<b>8</b>
<b>11.</b>	<b>PROJECT GOVERNANCE AND ORGANISATIONAL STANDARDS</b>	<b>9</b>
<b>12.</b>	<b>RECOMMENDATION</b>	<b>9</b>

# 1. EXECUTIVE SUMMARY

Council declared a Climate Emergency on 4<sup>th</sup> June 2019 and has developed a Decarbonisation Strategy and prospectus which outlines a number of commercial opportunities. This project sits well within the aims of these documents and strategic plans. Council also adopted a longer-term Transformation Strategy that seeks to explore potential commercial and investment opportunities and has committed to finding ways of supporting both these strategic aims.

The Cwm Ifor Solar Farm project will develop a 20MW solar farm on privately owned land north of Caerphilly. To date funding totaling £483,000 has been approved in order to progress the project to the position where there is a full business case for consideration. This will include; the preparation of a planning application, including all supplementary consultants work and reports and stakeholder engagement; procurement documentation, consultants and options for construction; and specific financial modelling. This work will mean that in 2023 Cabinet should be aware of all costs and options to be able to make a decision on the future of the project.

The overall costs of the project are currently estimated to be in the region of £12 – 16 million depending on preferred option and would look to provide 4.52% IRR, based on the current energy price projections. It is important to note that there are some potential fluctuations in costs. Some project costs have increased since the last outline business case due to a number of factors including Covid, issues in Ukraine and Brexit whilst technology improvements mean that panel sizes and therefore land requirements will reduce costs. It should also be noted that energy prices have also increased significantly. The current financial modelling is based on 6.1 pence per KWh, however current prices of 12.5 pence per KWh are being achieved. Nearer the time of final business case further modelling will be undertaken with additional energy price data purchased to provide the most accurate and up to date figures for Cabinet to consider. However, should prices remain at current levels the predicted income from the project will be double that set out in this outline business case. Sensitivity testing is ongoing.

The project has various options at this stage all of which will include benefits and the project group will be seeking to confirm the preferred option as the final business case is developed.

# 2. INTRODUCTION

CCBC declared a climate emergency in June 2019. Significant action is required to tackle the climate emergency. Development of a locally owned solar farm within the county borough will help to support decarbonisation of the local electricity system and demonstrate leadership with respect to tackling carbon emissions and decarbonisation of the energy system.

The Council was approached late Summer 2019 with a commercial opportunity in relation to a solar farm located on privately owned land at Cwm Ifor, Penyrheol. The proposals were to purchase a grid connection option, and further develop business cases exploring the viability and options for the solar farm development. The purchase of the grid connection is the first hurdle in terms of energy generation schemes, and this was secured in April 2020 following approval under delegated decision-making powers. The grid connection is considered a cornerstone to energy development projects without the connection the project would not be viable. We have secured the connection and agreed with Western Power Distribution that the work will be undertaken and connected in 2024.

The project had been considered desirable to private developers but two risks associated with the project had been identified; overage on the land and access; The overage on the land which requires the landowner to pay the original owner, in this case CCBC, a percentage of any profits is actually a positive position for the Council, as it gave us a strong negotiating position with the landowner making the development more attractive to Council. It is difficult to get large transportation vehicles on site however, this barrier will be overcome by using a decanting location, whereby the panels and other materials will be unloaded from the transportation vehicles and loaded onto smaller vehicles.

Welsh Government have set ambitious targets for 70% of electricity in Wales to be generated from renewable sources by 2030 and for 1 GW of locally owned energy to be installed by 2030. This project, which is believed to be twice the size of any other publicly owned solar farm in Wales, will contribute significantly to these targets. With less than 8 years to work towards achieving carbon neutrality this project will deliver a huge step forward towards meeting that aim, and whilst there are currently other projects in motion, they will not have the same impact towards multiple outcomes, nor are they as far along in the development phases.

This outline business case seeks to provide further clarity on the scale, design and outputs of the solar farm so that decisions can be made on the future of the project. The proposal is for a 20MW solar farm and it therefore falls within Welsh Government's definition as a Development of National Significance (DNS) as it is over 10MW and therefore the planning application will be determined by Welsh Government and not the Local Authority.

Negotiations with the landowner to secure the option agreement and lease on the land have now been concluded, and ready for signing.

### **Project Summary/Expectations**

- Cwm Ifor Solar Farm would be located in Penyrheol, Caerphilly.

- Has the potential to be the largest public authority owned solar farm in Wales. For example, Monmouthshire's Solar Farm is 5MW, and Carmarthenshire's is just under 9MW.
- The project has the potential to be a flagship project for Caerphilly, and the region, hence Cardiff Capital Region (CCR) and Welsh Government Energy Service (WGES) interest and support for the project.
- Development costs are expected to be between £12-£16m (not including costs of borrowing). The cost of the solar farm is around £600,000 per MW to build. However, there are external factors which will mean that this may fluctuate.
- Life span of the development is 35 years.
- Expected Investment Rate of Return (IRR) – 4.52% (annually between £669,000 and £892,000 during life of project) with payback in year 18.
- Financial modelling is based on 6.1 pence per KWh, however at present it is more like 12.5 pence per KWh so profit could potentially be doubled.
- CCBC currently purchases 28 MW annually at a cost of just over £4 million, this solar farm will be able to produce 20 MW (for a sense of scale). The costs of CCBC purchasing energy is set to change as the energy prices rise.
- Life-time CO2 savings are estimated at 55,300tCO2e are, or approximately 1,580 tCO2e /year which is enough to power approximately 6000 homes. The electricity generated will contribute to decarbonising the electricity grid.
- The project is a Development of National Significance meaning that WG will determine any planning application not CCBC. We will however be a consultee.
- If the planning application is successful, the solar farm will be a commercially viable product to sell on the open market, the Council can either proceed to construction or decide not to proceed with the development ourselves, but to potentially sell on the project.
- Revenues would be generated from the solar farm via a Power Purchase Agreement with Western Power Distribution
- The project coincides with current policies such as the transformation strategy, Commercial & Investment Strategy, Decarbonisation Strategy, Well Being and Place Shaping Framework
- It is estimated that 40 green jobs will be created during lifetime of scheme as well as creating educational opportunities for Primary, Secondary and Higher Education and apprenticeship opportunities
- There will be benefits to the local communities that are located near to the solar farm through a community benefits scheme and there is a potential for residents to invest and become involved in the Solar Farm

#### Considerations

- Current modelling does not factor in partnership, private investment or borrowing, all of which will be considered as part of the full business case process.
- There are various development options, including to use the energy produced for our own domestic/non-domestic stock, "energy sleeving". This and other

options will be evaluated as part of full business case development including benefits for residents.

- As an energy customer, CCBC currently buys 28,000,000 kWh of electricity from the grid for buildings & street lighting (excluding housing) all of which is purchased from renewable sources under our current contracts.
- Brexit, Ukraine issues and unstable markets particularly in energy and construction mean it is difficult to predict costs.

**Key milestones have already been accomplished during this project. These include:**

- Grid connection secured from Western Power via a novation in April 2020. This connection includes the proposed solar farm site as being last in line for switch off providing additional surety on revenue streams.
- Heads of Terms negotiated with landowner – including retaining CCBC Covenant on the land for the duration.
- Initial Land Studies completed with no major concerns noted.
- Team Caerphilly in full swing with ongoing involvement in the project team from procurement, finance, legal, planning, regeneration, energy team, communications, policy, county ecologist and landscape architects as well as ward members.
- Partnership working with Welsh Government Energy Service (WGES) and Welsh Government continues well, with strong relationships.
- Project currently in scope and with a full project timeline and budget is regularly reviewed alongside risk management.
- Full engagement with ward members has been ongoing throughout the project and Community Councils are now being included as part of consultation.
- There has been some consultation within the communities closest to the solar farm.

**Key milestones since the first outline business case include:**

- A financial model has been created in house, providing a saving of £10,000.
- Technical & Planning Consultants are now on board and are progressing well with the Planning Application & Environmental Statement.
- A procurement group has been set up to progress with the Construction Contract an Operation & Maintenance contract.
- Approximately 34.4 hectares (85 acres) of land is required for the proposed development. Negotiations with the land owner have taken place and the options agreement is ready to be signed and the lease agreed.
- Discussions have started regarding funding options, including community bonds and the infrastructure bank.
- Grid Connection has been secured for an “All works offer” with Western Power Distribution (WPD)

- Additional surveys and updated report are being worked on by the planning consultants
- The screening and scoping exercises have been completed ready for the planning submission
- The planning consultants in partnership with WGES are preparing, with us, for public consultation.

### **3. STRATEGIC FIT**

The Cwm Ifor Solar Farm proposal fits into a number of strategic aims. You can see below that the project hits a number of targets set out not only by CCBC but by Welsh Government.

Welsh Government have set the following targets relating to renewable energy:

- Wales to be net zero with respect to carbon emissions by 2050
- 70% of Wales' electricity consumption to be renewable by 2030
- 1 GW of electricity generated in Wales to be locally owned by 2030
- All new renewable energy developments to have an element of local ownership
- An additional 100 MW+ of public / community sector renewable energy generation to be installed between 2022 and 2026

The Council's Transformation Strategy sets out that the Council will endeavor to be more commercial and seek investment opportunities which offer financial benefit and non-financial benefits. This project would meet this strategic objective.

Furthermore the communication and engagement plan proposed as part of this project will demonstrate the Council's commitment to working in a more meaningful way with our communities.

On 4th June 2019 the Cabinet declared a Climate Emergency which was subsequently followed by the approval of The Decarbonisation Strategy along with two supporting documents – the Action Plan and the Energy Prospectus by Cabinet on the 25th November 2020. The documents propose a series of interventions under the 4 main headings of Reduce, Produce, Offset and Buy.

On 9th December 2020 the Cabinet agreed the Commercial & Investment Strategy which set out as part of the strategic action plan a commitment to investigate commercial opportunities when presented.

On 24th February 2021 Cabinet agreed to the Well Being and Place Shaping Framework and this project is identified as a potential investment under objective WB04.

## **Links to strategy**

### *Our Medium-Term Financial Plan Principles 2018-2023*

- We will adopt a longer-term approach to financial planning that considers the impact on future generations.
- We will engage with our communities to understand their needs and explore options to deliver some services through collaboration, partnerships, community trusts etc. to ensure that communities remain resilient and sustainable in the longer-term.

### *Decarbonisation Strategy*

Our Strategy is based on 4 pillars of:

- REDUCE - Reducing the amount of energy we use
- PRODUCE - Generating our own 'green' electricity and heat
- OFFSET - Offsetting any carbon emissions
- BUY - Everything we purchase has embedded carbon associated with it and this will need to be considered in the procurement process

### *Other Strategies*

- Regeneration Strategy Foundation for Success 2018-23 - Future Regeneration of the Borough
- Strategic Recovery Framework
- Wellbeing and Placeshaping investment Framework
- Commercialisation Strategy
- Programme for Procurement – using our spend to benefit the community

### *Wellbeing Objectives*

- Objective 1 Improve education opportunities for all
- Objective 2 Enabling employment
- Objective 3 Address the availability, condition, and sustainability of homes throughout the county borough and provide advice, assistance, or support to help improve people's well-being
- Objective 4 Promote a modern, integrated, and sustainable transport system that increases opportunity, promotes prosperity, and minimises the adverse impacts on the environment
- Objective 5 Creating a county borough that supports a healthy lifestyle in accordance with the Sustainable Development Principle within the Well-being of Future Generations (Wales) Act 2016
- Objective 6 Support citizens to remain independent and improve their well-being

### *Future Generations Act*



The Well-being of Future Generations Act requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change to create:

A Prosperous Wales

A Resilient Wales

A More Equal Wales

A Healthier Wales

A Wales of Cohesive Communities

A Wales of Vibrant Culture & Thriving Welsh Language

A Globally Responsible Wales

5 Ways of working

- Involvement
- Long term
- Collaborate
- Integration
- Prevention

The Future Generations Act defines Sustainable Development in Wales as: “The process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals.”

#### **4. EXISTING SERVICE DELIVERY ARRANGEMENTS**

As this would be a new site and a new scheme there are no existing service delivery arrangements.

Our current energy purchasing agreement ends in 2026. After that we can enter sleeving arrangements and use the electricity on our own estate. This will secure energy supply and costs for the lifetime of the project.

Recommendations of which department would be most appropriate to manage the ongoing operation and maintenance of the solar farm will form part of the final business case.

CCBC have a number of roof top photo voltaic (PV) installations across the authority of varying sizes. The electricity generated by the PV's is consumed by the buildings they are on, where generation exceeds demands on the larger installations, the excess generation is exported (sold) to the grid.

Local generation through PV's means that there is less electricity required from the national providers, but the national providers will always be required to meet demand at night and when PV generation is less through the winter months.

## 5. ANTICIPATED OUTCOMES

The scheme will act as a tangible demonstration of leadership by the Council in tackling the climate emergency.

It will generate income for the authority.

There will be benefits to the local communities that are located near to the solar farm through a community benefits scheme and there is a potential for residents to invest and become involved in the Solar Farm.

Community Benefits will be developed and designed alongside the community. Below is a list of some suggested options and following engagement with the community we will refine and cost up these benefits for the final business case:

- Electric vehicle demo days – information about reducing use of cars – cycle to work/walking days etc.
- Home insulation and heating decarb grant support
- Bio-diversity enhancements & Greening measures – to include improving or maintaining hedgerows at the proposed site.
- Fuel poverty measures – link to local groups supporting those in poverty.
- Investment/Repairs to local community
- Additional planning protection in neighbouring areas
- Employers scheme – funding to help support companies to recruit into green job apprentices
- Education and Youth Opportunities – linking up with local schools/colleges throughout construction and development.
- Community Bond Funding – consider this as a funding scheme and gifting shares/bonds to local groups
- Job creation/apprentices – looking into this as part of procurement processes.

Carbon Reduction – It is hoped that via a sleeving arrangement we will be able to reduce our carbon emissions. However, Welsh Government is currently reviewing the way carbon emissions from energy generation is accounted for.

Employment - Given the economic situation post Covid it is necessary to use investment as an economic stimulus. Using the UK Energy Research Centre report on employment metrics from renewables, it is possible to quantify the jobs resulting from

a 20MW solar farm with a life of 35 years. In total, including direct and indirect jobs (but excluding induced jobs as these are unlikely to be local), then around 40 jobs will be created from this project.

## 6. PROJECT/INITIATIVE ANALYSIS

To date a total budget of £483,000 has been approved to take the project to full business case.

This comprises of £49,000 approved by Cabinet on the 11<sup>th</sup> November 2020 for the novation and initial investigations.

A further £434,000 was recommended for approval by the Regeneration board on 30th March 2021 and formally approved by Cabinet on 23rd June 2021

### Summary of allocation of £483,000 budget:

<i>(Cost including Environmental Impact Assessment and assuming the use of single access trackers)</i>	
<b><u>Pre-Construction costs</u></b>	
WPD Works Pre payments	15,000
Topographic survey (purchase from Next Energy)	4,550
Extended Phase 1 Habitat Survey	7,500
Additional ecology (Winter bird surveys and spring bird surveys)	2,058
Agricultural Land Classification report	1,410
WPD Works Pre payments	10,000
Design/ layout/ tech information	8,912
Preliminary ecology appraisal (Phase 1) (undertaken by CCBC Ecologist)	In House

Archaeology/ heritage & Geophysical survey	28,095
Landscape and Visual Impact Assessment	9,392
Transport Route Assessment	650
Planning consultant: Writing planning submission documents	56,110
DNS Notification (prior to stat. public engagement)	580
Planning application submission	23,100
Application with Inspectorate	38,280
Application with Welsh Ministers	14,700
Discharge of pre commencement planning conditions	5,000
NRW consultation	938
Statutory public engagement	3,500
Land acquisition (main site)	31,750
SuD application	12,950
Purchase of Aurora Power Data	7,500
Legal Support regarding conversion to full works offer	2,000
Procure legal support (costs for EPC legals)	21,994
Habitat Survey - Breeding Birds	2,891
	85,464
WSP EIA (inc Digital, Surveys, ES, Scoping)	
LVIA for EIA	10,940
Additional work for planning design	1,400
Solar Tracker investigation	3,500
Contingency	88,337
<b>Total Pre-construction Costs</b>	<b>480,000</b>

## Construction costs

The current construction cost for this project are estimated as £12 - 16 million. The cost of borrowing using PWLB funding via the prudential borrowing framework has been included in the latest financial model and is viable at this stage. There are other funding options also being considered but as yet are untested. These will be assessed and set out in the full business case.

The financial modelling indicates a 4.52% IRR, with a range of yearly “income” from 2023 starting at £669,000 and rising to £892,000 p.a,

Please note the following assumptions for these high-level figures:

- Cost of borrowing
- Energy yield achieved
- Energy pricing
- Development & Construction costs
- Inflation rates
- The timeline of the project

If we purchase the electricity back via a sleeving arrangement this will also give the Council certainty over an element of energy supply and pricing for the duration of the project.

Financial impacts and potential allocation of revenues from the project will be further scoped as part of developing the Final Business Case. Ongoing financial sensitivity testing is continuing.

Attached to the business case is a project management financial model and a development financial model. These have formed the basis of the high-level summary below.

### Summary of Construction Costs

Construction Costs	11,825,944
Compound Area Cost	2,000
WPD Works	654,993
Lease Commencement	13,000
Stage 3 PPS Technical Costs	31,800
Additional PM support during construction	47,845

<b>Total Construction Costs</b>	<b>12,575,582</b>
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## Timeline

10/06/2022	EIA Scoping Submission
15/07/2022	EIA Direction from PEDW
01/09/2022	Environmental Statement Preparation
01/09/2022	Pre-Application Consultation (ends 13th October)
14/10/2022	PAC Report
18/10/2022	DNS Planning Submission (inc ES)
18/10/2022	SAB Application & Process
10/01/2023	SAB Outcome
18/10/2023	Planning Application Outcome
28/01/2022	Options Agreement & Lease Drafted
14/07/2022	Options Agreement Signed
14/07/2022	Lease Signed Off
01/03/2024	Lease Signed
01/03/2022	Procurement for Construction & O&M Contract Starting – Spec & Route
04/09/2022	Procurement for Legal Support Specification
21/11/2023	Construction Contract Legal Support Tendered
14/12/2023	Construction Contract Legal Support Awarded
01/01/2023	Construction contract Legal Support Implemented
01/01/2024	Construction & O&M Contract Tendered
01/03/2024	Construction & O&M Contract Awarded
01/04/2024	Construction Contract Implemented
11/12/2024	O&M Contract Implemented
01/12/2023	Power Purchase Agreement
01/07/2023	PPA Legal Support
14/08/2023	Power Price Data Set Tendered
11/09/2023	Power Price Data Received
01/04/2023	Agree Funding Opportunities
01/10/2023	Financial Modelling Completed
01/10/2023	Final Business Case Completed
13/11/2023	Approval from CMT
21/11/2023	Approval from Cabinet

### **Commercial Case (where applicable):**

The overall costs of the project are currently estimated to be in the region of £12 – 16m depending on preferred option and would look to provide 4.52% IRR, based on the current energy price projections. It is important to note that there are some potential fluctuations in costs. Some project costs have increased since the last outline business

case due to a number of factors including Covid, issues in Ukraine and Brexit whilst technology improvements mean that panel sizes and therefore land requirements will reduce costs. It should also be noted that energy prices have also increased significantly. The current financial modelling is based on 6.1 pence per KWh, however current prices of 12.5 pence per KWh are being achieved. Nearer the time of final business case further modelling will be undertaken with additional energy price data purchased to provide the most accurate and up to date figures for Cabinet to consider. However, should prices remain at current levels the predicted income from the project could be double that set out in this outline business case sensitivity testing is being carried out to identify revenue based on different scenarios. 4 key areas that need to be considered are construction costs

If we purchase the electricity back via a sleeving arrangement this will also give the Council certainty over an element of energy supply and pricing for the duration of the project.

All the contracts required will be awarded with full compliance to legislation and using frameworks where possible.

The largest spend is in relation to the EPC contract and for this there are several options we could utilise. The current preference is to utilise a partnership agreement which links to the overall objectives of the Decarbonisation Strategy, Commercial Strategy and Transformation Strategy in creating a collaborative partnership to help us deliver multiple renewable energy schemes across the County Borough. In creating a partnership model we are also avoiding repeated procurement exercises, managing multiple contracts and utilising the experience and project management skills that would come with a partnership arrangement. This is how we will most likely proceed for future renewable energy projects. This will be examined further and will form part of the full business case.

### **Cultural Impact:**

This project will support and reinforce the organisations values and approach in relation to the following:

- Carbon reduction commitment
- Enabling employment
- Improved ways of working as this will be a new scale of project for officers to engage with and learn from
- Developing proud & trusted staff
- Commercial mind, social heart ethos which underpins Team Caerphilly transformation strategy.
- Commitment to long term thinking, collaboration and integration as part of our Well Being Future Generations duties.

- Contribute to Welsh Government Energy Targets for 1 GW of locally owned renewable electricity capacity by 2030, and 70% of electricity consumption in Wales to be from renewable sources by 2030
- Improving biodiversity by integrating biodiversity enhancement measures on land currently used for agriculture

The scale of this project will demonstrate Team Caerphilly's commitment to trying new ways of working, investing with the commercial mind social heart ethos and demonstrating a new way of engaging our communities in a way few other projects would be able to do so.

### **Capability:**

Generally across Wales there is a lack of expertise within local authorities on this type of large scale renewable energy projects, however we have good experience in managing large scale projects via our Regeneration, Transformation and Policy teams and some focused experience on solar panels as a result of work done on roof top panels. Our property services team is capable of supporting the land transactions and associated legal documentation with support from legal.

We are supported extensively by Welsh Government Energy service who bring a wealth of knowledge and experience in the solar development market, particularly with local authorities.

Where we do not have experience, we have built into the business case the requirement to purchase this specialist knowledge;

- Procurement of an Energy Performance Contract provider including legal and technical support for that procurement exercise
- High voltage technical support
- Planning consultant
- Operations & Maintenance contractor
- Landscape designs & associated reports

During the course of developing this project which has now been incorporated into the Council's Place Shaping Agenda there has been a lot of excitement and commitment to a solar farm of this scale within our County Borough. We are expecting this to continue going forward as the project has the ability to achieve so many of our ambitions as a council in relation to climate change, commercialisation and community benefits.

### **Sustainability:**

As a public body Caerphilly County Borough Council has a duty, set out in the Well-being of Future Generations (Wales) Act 2015, to adhere to the Sustainable



Development Principle, which stipulates that “We must act in a manner in which we ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.” In order to evidence how this has been applied we must use integrated, preventative and collaborative approaches that take account of the long-term and involve our communities.

These five ways of working have informed our approach to this proposed development.

### *Key sustainability issues*

#### Climate Change

Climate change is one of the key sustainability issues facing mankind, with emissions of greenhouse gases, and in particular carbon dioxide (CO<sub>2</sub>) being the primary causes. Caerphilly County Borough Council (CCBC) declared a Climate Emergency on 4th June 2019 which included a target to become net carbon zero by 2030.

CCBC’s Decarbonisation Strategy was approved by its Cabinet on the 25th November 2020. Producing our own renewable energy is a key component of the Strategy and the Cwm Ifor development will provide the single largest contribution to this. The generation of renewable energy will reduce the requirement for it to be generated from fossil fuels which release carbon during the process. Oil, coal or gas which are the traditional fossil fuels are also finite resources so the generation of energy from the sun will help to reduce the depletion of these materials.

The development will save 55,300 tCO<sub>2</sub>e over its 35-year life. Based on current WGES estimation method (updated following National Grid Future Energy Scenarios update):

Throughout the consultation, development and management of the project opportunities will be identified to engage with local residents to highlight climate change issues and to enable them to become involved in practical action to tackle climate change

#### Biodiversity

Biodiversity across the UK including in Caerphilly County Borough is in decline. This development will seek to protect and enhance the biodiversity on the site. The site currently comprises a number of small fields which are grazed with sheep. The field boundaries are defined by a combination of scrub hedge, small trees, dry stone walls and stock proof fencing. Sheep grazing is generally not good for overall biodiversity and most of the areas of ecological interest on the site are currently in the field boundaries. Field boundaries will be left intact as part of the scheme and there are potential opportunities for enhancement with additional hedging, wood piles for reptiles and potentially space for beehives or insect hotels as recommended by the Council Ecologist.

An area of semi-improved grassland with areas of hard and soft rush has been identified and solar panels will not be located in this area.

A 35-year Biodiversity Management Plan (BMP) will be produced for the site incorporating the recommendations from the Ecological Appraisal. Although panels will cover the majority of the existing improved pasture, the whole of the area will remain as pasture, and the aim will be to improve the biodiversity through the implementation on the BMP.

#### Air quality

There will be some negative impacts on air quality during the construction phase of the work, primarily from vehicles taking the solar panels and material to site. Overall, however the development will have a significant positive effect on air quality as outlined in the section on climate change. For example, the use of renewable energy for electric vehicles as opposed to petrol or diesel vehicles will have a significant impact on air quality. This will be particularly relevant to the town of Caerphilly which has an air quality management zone due to the poor air quality in one area of the town.

#### Community engagement

A key element of the “5 ways of working” set out in the Well-being of Future Generations (Wales) Act 2015 is the involvement of communities in decisions or programmes that affect them. It is intended to engage with, and involve local residents and stakeholders throughout the consultation, construction and management phases of the project. Opportunities will be identified to actively involve local communities particularly in practical projects and educational work linked to climate change and biodiversity.

#### Community benefits

This project offers the opportunity to provide significant benefits to the local community. The project will seek to maximise opportunities for local employment and training. The community will be consulted to identify how any community benefit funding will be targeted or spent. There is potential for the community to invest in the project through community bonds.

#### **Equality:**

A full Integrated Impact Assessment has been completed for the outline business case and whilst many of the known outcomes are still variables, we will continue to address these as part of the final business case development.

#### **Health:**

A full Integrated Impact Assessment has been completed for the outline business case and whilst many of the known outcomes are still variables, we will continue to address these as part of the final business case development.

### **Technology:**

Solar farms use simple and proven technology, providing a source of safe, locally produced renewable energy for many years after construction.

Solar farms are an effective and efficient way of creating the electricity we all use. They have low visual impact on the surrounding landscape, create almost no noise and generate no pollution or emissions during operation.

A solar farm is a large number of solar panels mounted on racks with legs typically driven into the ground or ballasted using concrete. The panels face the sun and electricity produced is connected directly to the existing electricity infrastructure. We are currently exploring new technology and there is potential to use solar trackers.

Solar panels are semi-conductors and produce DC (direct current) electricity. Inverters turn the DC electricity into AC (alternating current) electricity and transformers increase the voltage to allow the electricity produced to be connected to the grid.

A protective fence is usually constructed around the solar farm with infra-red CCTV cameras, to ensure public safety and security. Indigenous hedgerow can be planted to ensure the site is screened and blends with the natural landscape.

Solar farms can help rejuvenate land and provide a place for nature and wildlife. The land around the panels can be maintained as grassland and supplemented with wildflowers suitable for Wales such as clover and snowdrops, which help to encourage populations of bees and ground-nesting birds. Winter bird seed mix can also be planted to help support bird populations.

Hedging around the protective fence can be restored and enhanced, providing better habitats for wildlife than intensively farmed land. The ground beneath the panels can be used to graze small breeds of sheep or managed entirely as hay meadow and wildflowers.

Solar farms are a relatively straight forward non-invasive construction that can be completely reversed at the end of its working life.

The metal racks supporting the panels are dismantled and recycled when the scheme is decommissioned. Only a few small structures are needed on-site to house electrical equipment, and these are easily taken away at the end of the solar farm's working life.

Solar farms are a quick and simple form of construction typically taking around 12-26 weeks to complete, depending on their size. During construction there will be additional traffic to the site. However, once completed there are very few visits to the site as the solar farm is monitored remotely and only requires light vehicles for maintenance.

### **Project Assumptions:**

- Financial assumptions are included in the Financial Viability section.
- We have assumed the Climate Emergency will remain a key priority for the Council.
- We have assumed that the construction costs will rise by approximately £2m but do not know by how much until the procurement process is completed.
- We are assuming that the energy prices will remain high but have modelled for lower costs so that we cover worst case scenario.
- We would like to see markets stabilise but we have assumed it will not. The issues in Ukraine, Brexit and Covid have all had an impact on markets.
- We are assuming that we have considered all risks that are outlined in the Risk Assessment section and have mitigated those risks.
- We are assuming we are in a position to build in 2024.
- We are assuming that the Planning Application & Environmental Statement & SAB application will be approved and have mitigated as best we can to ensure that it is.
- We are assuming we can keep to the timeline.
- We are assuming we can acquire the money and resources needed for the project.

### **Project Constraints:**

The project is constrained by the following:

- Planning
- Timescales
- Consents being granted (in a timely manner)

## 7. OPTIONS ANALYSIS

Number	Option	Anticipated costs	Carbon reductions	Community Benefits	Employment Benefits	Maximum return on investment benefits
1	Do nothing – maintain status quo	£0	x	x	x	x
2	Cease the project & look for suitable large scale alternatives to help meet carbon reduction commitments. This would include selling the grid connection	£?	?	x	x	x
3	Build the Solar Farm then sell on open market	£14 million	x	x	✓	✓
4	Partner with a developer	50/50 split or similar	✓	?	✓	x
5	Continue with the project through to FBC as proposed	£14 million	✓	✓	✓	✓

<b>No Project (Status Quo)</b>	<b>Reasons For Not Selecting Alternative</b>
The Do Nothing option – cease work on this project and do not look for an alternative.	This would not further any of our strategic benefits or outcomes or deliver any benefits for the communities, or financial returns for the Council.
<b>Alternative Option 2</b>	<b>Reasons For Not Selecting Alternative</b>
Cease Project entirely and look for another suitable large scale project to help meet carbon commitments. This would include selling the grid offer.	There are several other projects which are at the early stages and the Regeneration Energy team have a work programme of renewables but none with the same outputs and outcomes as the solar farm.
<b>Alternative Option 3</b>	<b>Reasons For Not Selecting Alternative</b>
Build the solar farm and then sell on the open market as an investment opportunity.	This would only deliver financial returns and none of the potential community benefits.
<b>Alternative Option 4</b>	<b>Reasons For Not Selecting Alternative</b>

Partner with a developer to help build and develop the site for a share in the outcomes	We would de-risk the financial element of the project but also minimize our returns both financially and for the communities.
<b>Alternative Option 5</b>	<b>Reasons For Not Selecting Alternative</b>
Continue with the project as is through to final business case	

## 8. JUSTIFICATION

The Cwm Ifor Solar Farm is a financially viable project that will not only help CCBC achieve its net zero carbon targets but will also bring in an income to support future decarbonisation projects and ongoing services

The project has the potential to deliver against a number of key strategic plans the Council has adopted including making a significant impact towards delivery of the Council's decarbonisation objectives.

## 9. RISK ASSESSMENT

Topic	Risk & Impact	Mitigation
Project construction may not be started until 2025	<p>Risk of delay to the project resulting in higher costs associated with project lag.</p> <p>Cost of materials may increase or come down in price with a delay to the build. This is hard to predict as markets are very volatile at present</p>	<p>Formal consultation will start at the earliest opportunity. Progress will be made in advance to plan for the consultation.</p> <p>Specification will be drawn up in advance so that the procurement process can run smoothly</p>
Planning Application outcome could fail or be delayed	Project will not be able to go ahead or sold that could result in a financial loss that is unrecoverable	<p>Contact is being made at an early stage with WG and other statutory consultees Planning consultants selected for the process advise local councils in Wales on Planning Applications advice so are well equipped to deal with the process Reports are being updated in advance</p>
Cost of project could dramatically increase	Project may become no longer viable due to increased costs of project, incurring a loss of the initial funding	<p>Procurement process will take into account cheapest cost Financial modelling is being undertaken throughout the project initiation Power price data sets will be purchased to make the most accurate forecasting</p>

Electricity market could slump leading to low levels of income	Project may not make the intended profit and lose money	Power Price data sets will be purchased to forecast energy projection income over the 35-year period of the project
A suitable contractor for construction and ongoing maintenance may not be found within budget (esp if newer technology is used)	Project could cost substantially more than expected and become over budget or not be able to proceed if a contractor cannot be found	Procurement process will specify what is needed Procurement process will start early
SAB application could fail	Concerns could be raised if flooding is considered a risk, and process could become more costly due to mitigations that could be required	Contact is being made at an early stage with the SAB Team Planning consultants selected for the process advise local councils in Wales on SAB advice so are well equipped to deal with SAB applications
Project may become politically or publicly sensitive	Public perception of the Council and the Solar farm could be impacted	Members are being kept up to date as project continues Residents are being consulted through the project Communities will benefit from the solar farm
Decanting location could be lost	Could delay the project as planning consent will be for the chosen location	Regular contact with Waste Management is being undertaken to keep a check on their position



# 10. PROJECT OVERVIEW AND OUTLINE PLAN

## Phase 2

- Compilation of a planning application, EIA, SAB and planning submission
- Responding to queries during the planning determination periods (DNS process)
- Preparation of procurement of Engineering Procurement, Construction contractor (EPC) to install the solar farm
- Preparation of procurement of Operation and Maintenance (O&M) contractor for the first two years of operation (will need to be the same entity as the EPC contractor to avoid disputes and ensure that performance clauses are fully enforceable during the defects/acceptance period)

During this period, CCBC will prepare for the procurement process, including establishing the procurement team, developing tender documentation and selecting advisors.

Consultation & Engagement – The project will seek to go beyond the statutory planning requirements as part of our commitment to the Consultation and Engagement Framework previously agreed by Cabinet. There will also be a separate work stream on consultation and engagement for those residents that may experience some disruption during the construction phase of the project.

Once planning permission has been obtained, the outline business case will be reviewed to ensure nothing has changed that might affect the validity of the project.

A high level option assessment of funding has already been undertaken. During the next stage a detailed finance options appraisal will be undertaken focusing on potential funding streams for the development. This will include consideration community options, including community bonds, the National Infrastructure bank, UK Government and any other funding streams to leverage in funding to help deliver this project. This workstream will also look at the power purchase agreement and the implications of this on the Council’s current energy purchasing and carbon accounting.

Community Benefits – there are a range of potential community benefits that this project could support and some potential options are set out in section 5. The focus of the consultation and engagement exercise will be to identify which are the preferred options from the community and then build these into the project plan including any financial commitments, one off or revenue, and the impact of those on the financial modelling of the scheme.

## Phase 3

This will include the completion of the procurement phase. The aim is to obtain quotations for a contractor to design and build the facility and undertake the early years' operation, ensuring it performs to specification. The procurement will follow a rigorous evaluation process and select the best solution from a number of tenderers.

The outline business case will be revised using the preferred bidder's tendered values and the actual Power Purchase Agreement price to produce a final business case.

At this stage the final business case with a full options evaluation will be presented to Cabinet for a decision on the project.

## **11. PROJECT GOVERNANCE AND ORGANISATIONAL STANDARDS**

The following project arrangements have been in place during the development of the outline business case and will continue through to full business case and beyond.

The project is on the Regeneration Board governance process and so has been approved by the Regeneration Assessment panel that is held, as it was successful the project was referred to the Regeneration Board for consideration. All projects approved by the Regeneration Board are then added to the forward work plan for Cabinet approval and call in process. This has also been completed and it now coming back to the new Cabinet for further approvals.

Project Leads: Paul Cooke, Transformation Manager, Decarbonisation & Anna Lewis, Transformation Project Officer

Team Members include: Principal Planner, Regeneration Manager, Energy Manager, Senior Planning Officer, Senior Procurement Officer, Senior Policy Officer, Legal Officer, Chief Accountant for Housing as financial support, Group accountant for Treasury and Capital, Senior Communications officer for Team Caerphilly.

During the production of the outline business case the following governance arrangements have been in place:

- A Project Group to review project progress on a regular basis.
- The Project Leads and the appointed officer from the Welsh Government Energy Service (WGES) meet on a monthly basis (or as required). The Project Leads, Decarbonisation Manager and WGES will meet on a bi-monthly basis (or as required) as the Project Group.
- The project budget (for procurement, planning and grid connection) has been secured using a Project Brief with the approval of the Regeneration Board.  
Cabinet approval for the project to continue has been undertaken and will be reaffirmed.

- In terms of securing sufficient project team resource, WGES will provide close support to the Project Leads during the development phase. Other key support in relation to Legal, Planning and Technical support has been procured.
- Engagement with Council Members and Cabinet lead has been on a monthly basis (or as required) during the development of the outline business case and will continue through to final business case.
- The final business case with costings and detailed proposals will be presented to Cabinet for approval prior to proceeding further with the agreed option.

## **12. RECOMMENDATION**

Cabinet to approve:

- the outline business case,
- the project to proceed with the planning application,
- the initiation of the consultation processes
- signing of the option agreement and lease that sits behind the proposed Solar Farm development

A further report including the full business case and funding proposals will be brought back to cabinet.