

Andreas Airfield



Fáilte

Andreas Airfield development is a landowner led project that aims to repurpose 'previously developed' land to create a vibrant rural commercial employment zone. At the heart of the project is a renewable energy hub including:

- Ground-Mounted Solar PV (GMPV)
- Anaerobic Digestion (AD)
- Battery Storage

The project aims to support local economic growth, the Manx farming community and help the IOM meet key ambitions.



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Renewables Objective

Andreas Airfield is designed to support Isle of Man priorities for more on-island renewable generation, greater energy resilience, and progress towards net-zero by 2050.

Policy Alignment:

- **Island Plan:** supports delivery of 30 MW on-island renewables by ~2026, improved resilience, green growth and net-zero 2050.
- **DEFA Department Plan (2025):** supports wind/solar deployment, enabling planning/consenting for energy infrastructure and climate mitigation.
- **DEFA Energy Strategy (2024, Updated):** targets $\geq 75\%$ renewable electricity by 2035 and recognises the need for storage and grid flexibility.
- **MNFU priorities:** renewables that co-exist with farming, protect food security, and support fair land use.
- **Manx Utilities drivers:** a reliable and affordable low-carbon system, integrating renewables and enabling technologies (e.g. storage).

Project Deliverables:

- **Local clean generation:** phased delivery (solar PV & AD).
- **Flexibility & stability:** battery storage to help balance supply and demand.
- **Reduced imported fuel exposure:** improved energy security and long-term price resilience.
- **Rural co-benefits:** supports farm diversification, skills and local jobs, using previously developed land.

Why Now?

- Global energy risks and price volatility strengthen the case for more local supply.

- Storage helps renewables work harder by providing firm, flexible power.

- A low-carbon, resilient energy system supports investment and protects the Island's biosphere commitments.

Selecting a Site



Andreas Airfield is previously developed land that is ideal for redevelopment. However, prior to taking the land forwards into planning we needed to consider many other aspects of suitability.

People & Place

How a site affects the people who live, work, and spend time nearby.

Visual impact

We map views from footpaths, roads, and homes, and consider how trees, hedgerows, and landform can provide natural screening.

Archaeology & heritage

We survey for archaeological remains and consider the setting of listed buildings and historic landscapes to protect their character and significance.

Site access

We assess local roads for construction and maintenance traffic, and plan to minimise disruption to communities.

Safety & Infrastructure

Whether a site is safe and technically deliverable.

Flood risk

We assess flood risk to the installation and to surrounding land and properties. Sites with high flood risk are ruled out early.

Geology & ground conditions

We survey soil stability, rock type, and underground features to confirm a site can safely support the required foundations and infrastructure.

Grid connection & network resilience

We check proximity to electricity infrastructure and local network capacity. A site that cannot connect efficiently is not a viable option.

Nature & Land

What is already living here and how we can improve it.

Protected designations

We check for SSSIs, National Nature Reserves, and Registered Tree Areas. Sites in conflict with these protections are ruled out at an early stage.

Ecological impact

Surveys identify species and habitats present — birds, bats, hedgerows — shaping how we design and build on a site.

Biodiversity gains

We look for opportunities to create new habitats so the land supports more wildlife after the project than before.

Land quality & agricultural use

We assess current farming use and land quality, including how the land will be retained in agriculture throughout the project's life.



LEGEND

0.5km from development boundary

0.4km around anaerobic digestion plant

Development Boundary

Existing Light Industrial Zone (50 acres)

Designated Wildlife Sites

Registered Tree Areas

Footpath

Private Property

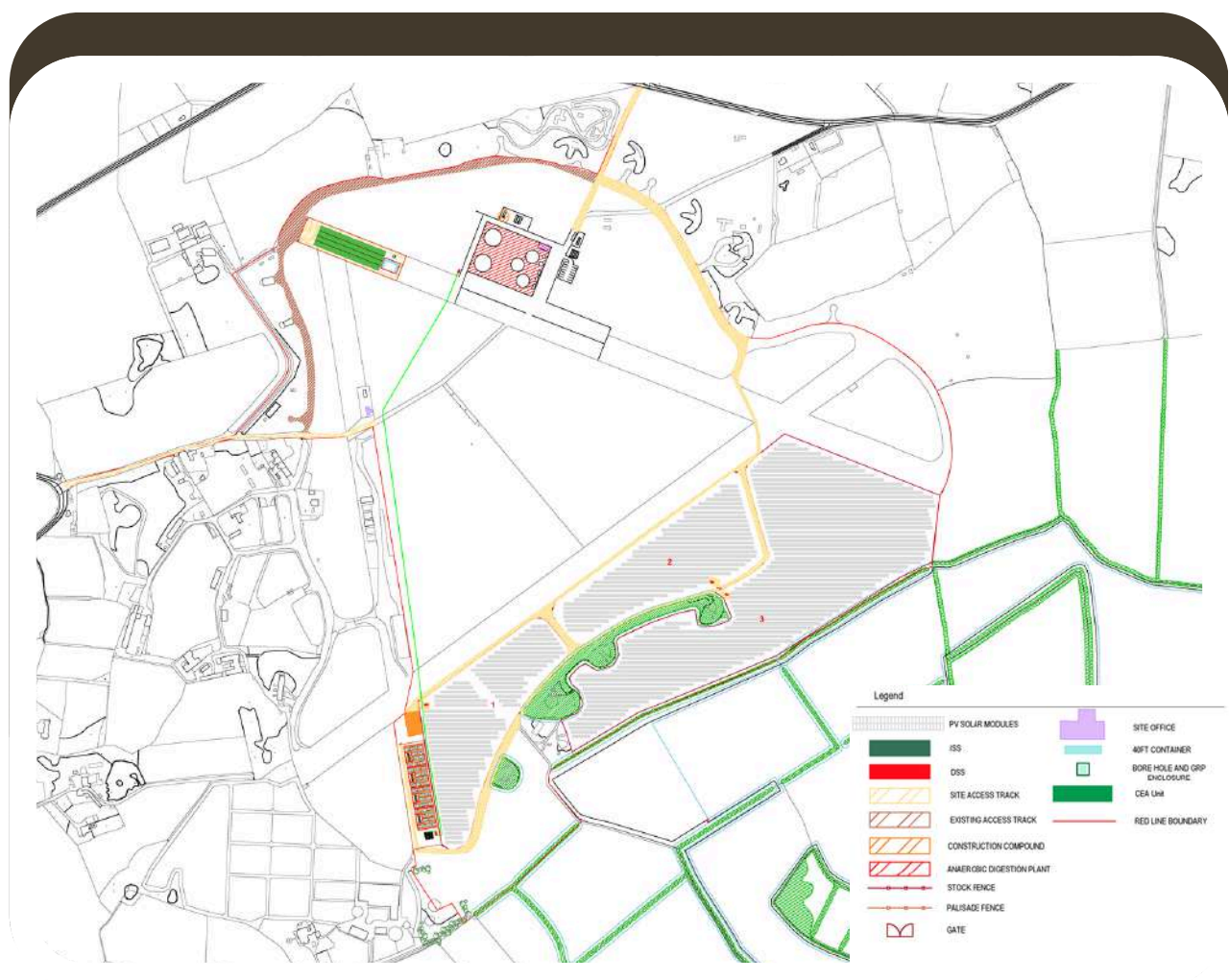
About the Site



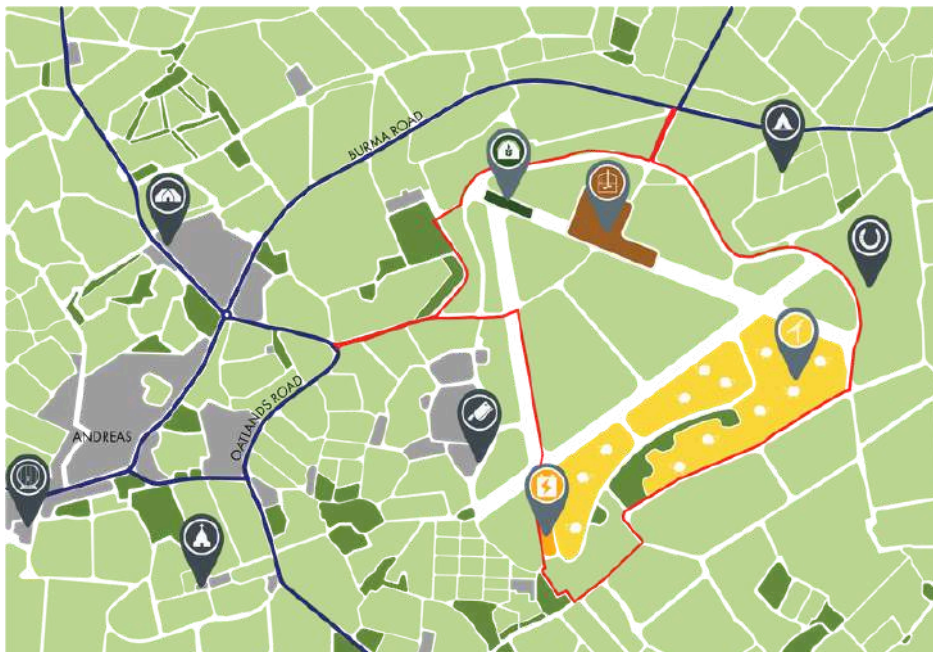
The 356-acre airfield site includes over 150 acres of existing infrastructure — runways, hard standing, roadways and commercial uses. Development focuses on 77 acres adjacent to the runways, comprising an Employment Zone (14 acres), Anaerobic Digestion Plant (8 acres), Ground-Mounted Solar (54 acres), and Battery Energy Storage (1 acre).

The Energy Hub will deliver up to 27 MW of renewable energy, with combined solar and AD output equivalent to the electricity demand of approximately 15,000 homes — around 35% of Isle of Man households. The AD plant will additionally meet the annual heat demand of 300 homes.

Designed to operate as a fully off-grid, islanded system, the scheme provides stable, affordable power for site occupiers, with a future-proof design capable of bidirectional grid connection.



The Project & Timeline



LEGEND	
	Pony Club Relocation
	Silly Moos Campsite
	The Grosvenor Pub
	Village Hall
	Agriculture Barn
	Anaerobic Digestion (AD)
	Andreas Meat
	Energy Storage
	Ground-Mounted Solar (GMPV)
	Kirk Andreas Church

2026

Planning
Application and
Project
Development

Community
Consultation:
May/June 2026

Planning Application
Submission Target:
July 2026

Consented Project
Target:
November 2026

2027

Phase 1
Construction
and
Connection

Construction of:

- < 5 MWp GMPV (Apr – Aug)
- < 10 MWh BESS/LDES
- Microgrid to connect on-site demand

Connection to:

- 11 kV network, with grid supply of 1.5 MW

2028-2030

Phase 2
Construction and
Connection

Construction of:

- 2 MW AD
- 20 MWp GMPV)
- > 90 MWh BESS/ LDES

Connection to:

- 33 kV network, with grid supply of 5 MW)

Ongoing Integration:

- Site energy users to microgrid

The Microgrid



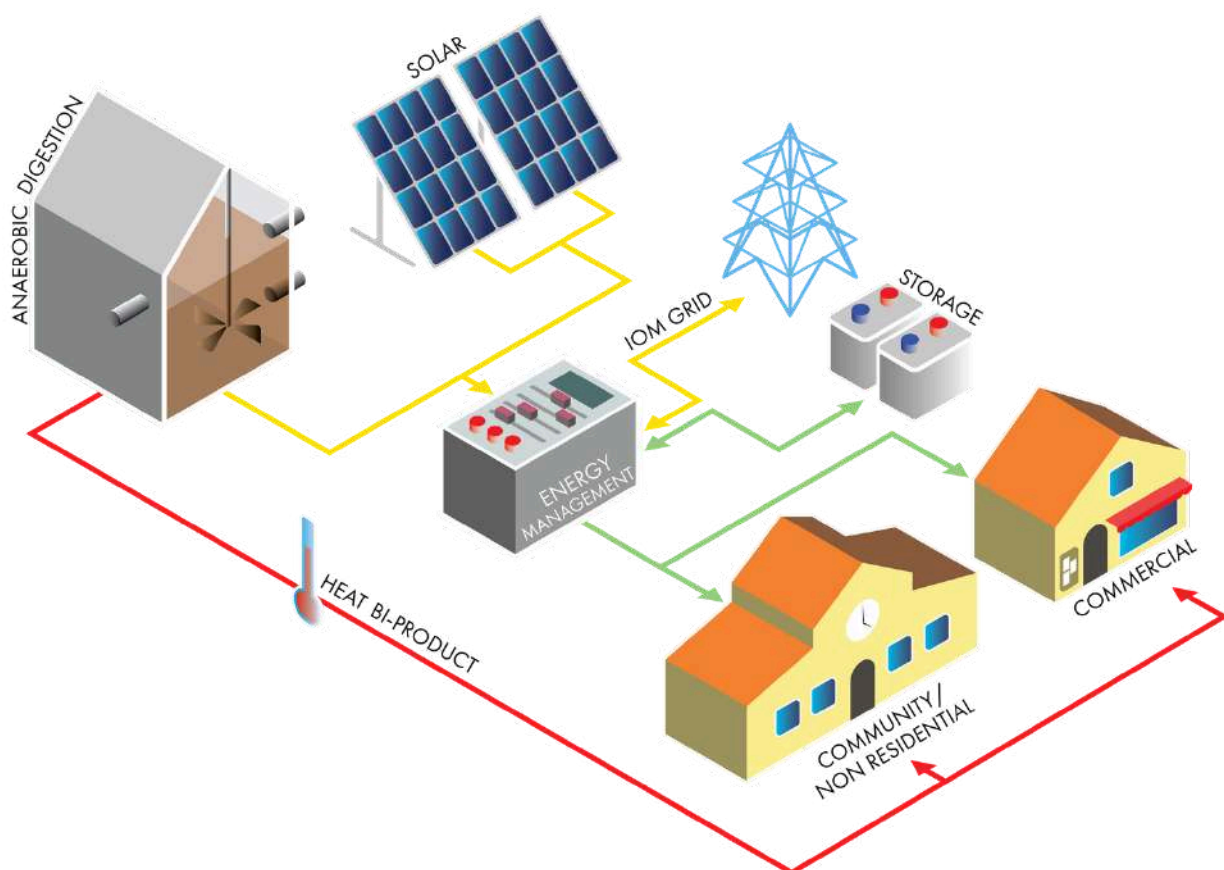
A microgrid is a localised energy system that can generate, store and distribute power independently from the main grid, connecting multiple energy sources with storage and controllable loads, managed by an intelligent energy management system.

The microgrid is capable of operating in 3 modes:

Island Mode – Off Grid / Standalone – disconnected from the IOM Grid

Transition Mode – Islanding – switching on and off-grid as requested

Grid-Connected Mode – On Grid – fully connected to Grid



The site is designed to operate fully islanded from the IOM grid for added energy security, while also maintaining a bi-directional grid connection to import power when required and potentially export clean power to support the wider IOM electricity network.

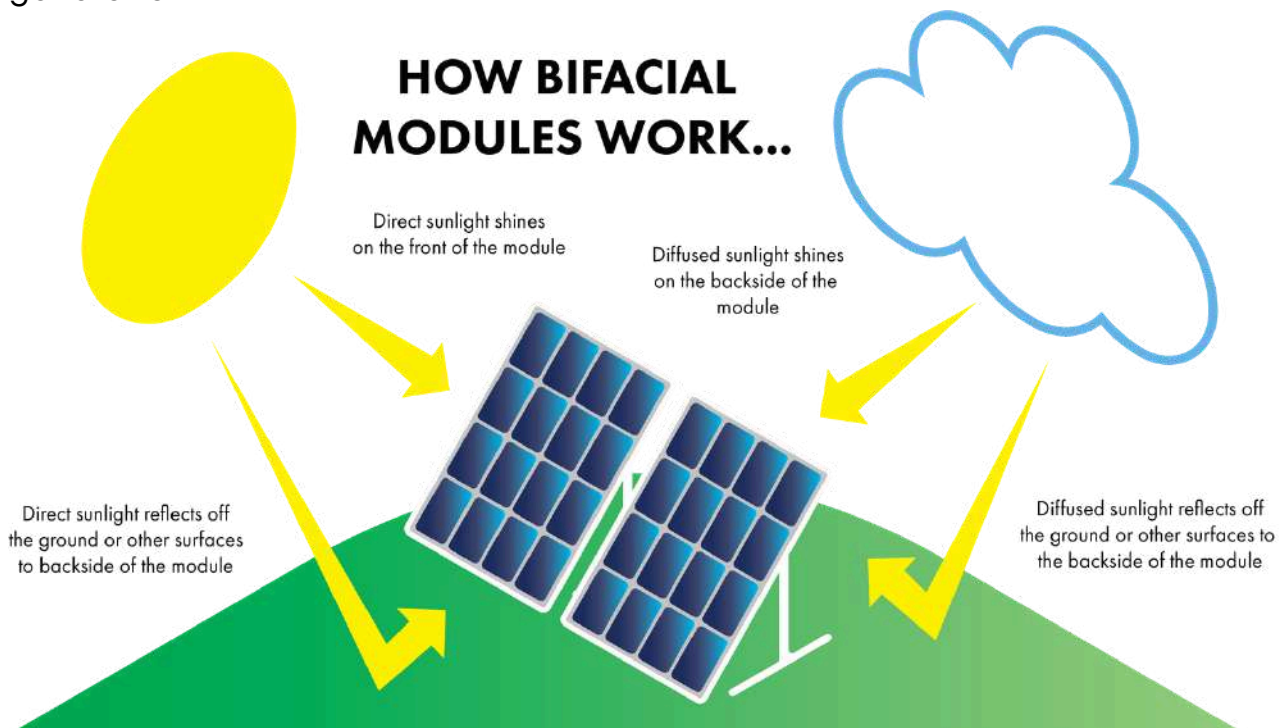


Why Ground-Mounted Solar

Ground-mounted solar photovoltaic (GMPV) systems provide dependable, lowest cost source of renewable electricity.

Designed to operate for around 40 years, GMPV systems are modular and scalable, allowing the project to be developed and decommissioned efficiently.

The site can support dual land use through agrivoltaics, enabling agricultural, biodiversity and habitat enhancement to continue alongside energy generation.



How the Solar PV System Works

The solar panels convert sunlight into electricity, which is then converted into a form suitable for the electricity network and exported via underground cables to the local grid.

The project uses bifacial panels, which generate additional electricity by capturing reflected light on both sides of the panel, improving efficiency and reducing the land area needed for generation.



Why Battery Storage

Battery energy storage systems store electricity generated from renewable sources, such as solar and anaerobic digestion, and release it when demand is high or generation is low, helping to balance the electricity network and reduce reliance on fossil fuels.

Selecting the right technology depends on the scale of storage required, how long energy needs to be stored for, and the expected operational lifetime of the system. Different technologies offer different advantages in terms of performance, cost, and safety. The table below compares two leading battery storage technologies to inform the choice for this project.

TECHNOLOGY A Vanadium Flow Battery VFB / VRFB		TECHNOLOGY B Lithium Ion Li-ion
PERFORMANCE & LIFESPAN		
10,000–20,000+ cycles ✓	Cycle life	3,000–6,000 cycles
25+ years ✓	Lifespan	10–15 years
65–75%	Efficiency	✓ 92–96%
4–12 hours ✓	Storage duration	1–4 hours
SIZE & COST		
20–30 Wh/kg (bulky)	Energy density	✓ 90–160 Wh/kg
£300–£500/kWh	Installed cost	✓ £150–£300/kWh
SAFETY & ENVIRONMENT		
Non-flammable ✓	Fire risk	Very low
Electrolyte reused forever ✓	End of life	Cells recycled
AT A GLANCE		
~15,000 cycles	Cycle life	~4,500 cycles
~25 Wh/kg	Energy density	~125 Wh/kg
~70%	Efficiency	~94%

Why Anaerobic Digestion



Anaerobic Digestion (AD) plants provide a sustainable source of energy production by converting organic materials into biogas in a process that ensures energy can be generated all year round providing energy security.

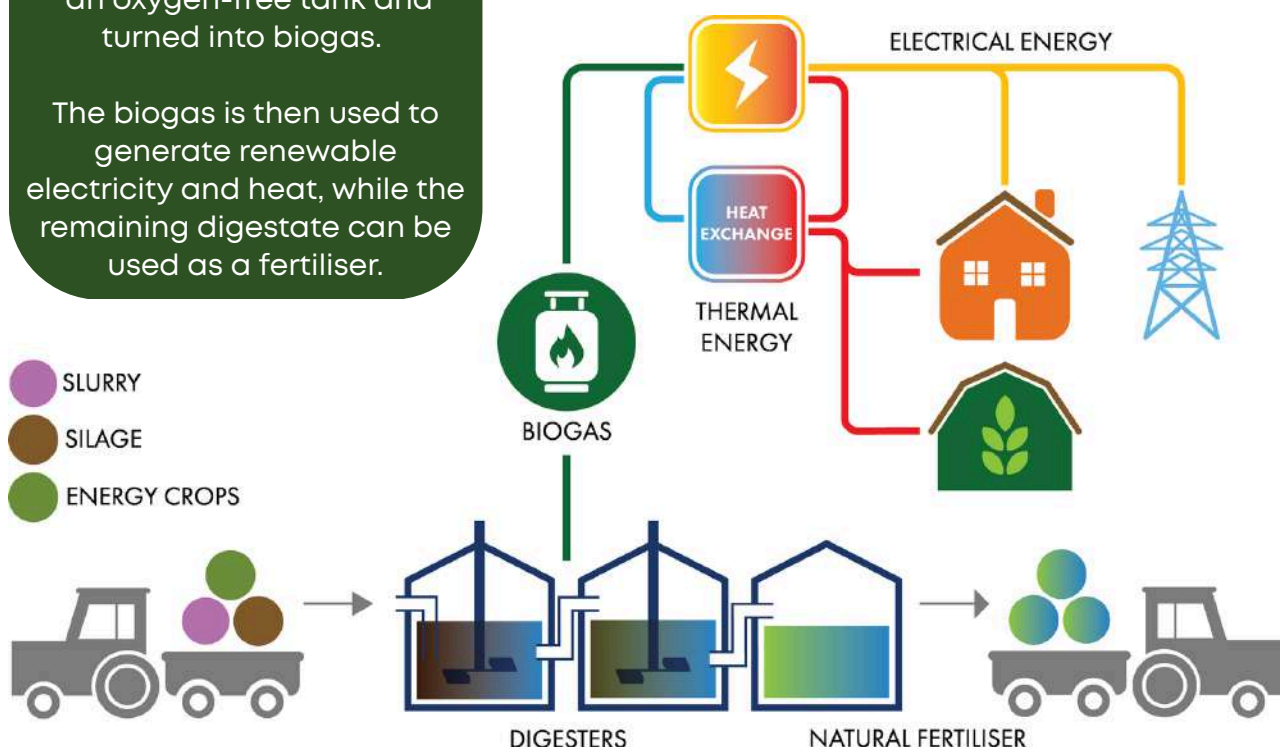
This is a crop led project, using locally grown maize, sugar beet and grass silage which will be supplied by a Manx farming co-operative providing benefits to the wider agricultural community. The AD is **not** run on human waste.

The heat produced by the AD plant could be used to create a district heating system, and the plant also produces biofertiliser which is used by the Manx Farmer to help grow future crops.

Organic material such as agricultural crops and manures is broken down naturally by naturally occurring bacteria in an oxygen-free tank and turned into biogas.

The biogas is then used to generate renewable electricity and heat, while the remaining digestate can be used as a fertiliser.

How it Works



Opportunity & Benefit



A multi-benefit approach delivering economic, social, and environmental value for the Isle of Man.



ECONOMIC ACCELERATOR

- Supports agricultural diversification
- Raises IOM revenue - reduces revenue export
- Creates stronger circular economy
- Platform for innovation & investment
- Good news - positivity



POWER

- Energy security & grid stability
- Overcome local grid constraints
- Decarbonisation
- Identifiable source of generation
- District heating potential



DEVELOPMENT STRATEGY

- Scalable project
- Meet local demand
- Support/promote inwards investment
- Bio-med, IT/data, agri-tech



COMMUNITY

- Levelling up - regional investment
- Employment & training opportunities
- Energy sovereignty
- Stronger local agriculture
- Multi-generational



AFFORDABILITY

- Privately funded = no taxpayer risk
- Reduce exposure to global power import
- Blended technology = reduced levelised cost of energy (LCoE)



ENVIRONMENT

- Protect the Biosphere
- Meet 2026-2030 climate targets
- Using pre-developed land
- De-carbonisation - heat and power
- Organic fertilizers



Energy & Agriculture

The concept is designed to keep land in productive use through solar grazing as well as supporting the wider farming community through crop sales to run the AD. Andreas will supply affordable local green energy, reduce exposure to volatile markets, and strengthen rural resilience through local jobs and supply chains.

Locally sourced feedstocks provide long term support for the agricultural economy by creating a stable, reliable market for crops and feedstocks grown by nearby farmers.

Stability

Long-term contracts to support and incentivise local production. Farmers play an integral part of the system and allows them to forecast long term.



Economic Growth

Through haulage, increased crop sales and site operations it is expected to generate an extra 10 jobs for the agricultural economy.

Diversification

Complements established island farms already equipped to supply feedstock needs. Andreas will create reliable new revenue streams for local farmers through long-term demand for locally grown feedstocks.



Protecting the Biosphere



Designated in 2016, UNESCO Biosphere Isle of Man encompasses the entire island and its territorial seas and recognises the island's natural beauty and biodiversity.



Ecological Assessments:

- Ecological Impact Assessment (EcIA) & Biodiversity Net Gain Metric and Plan
- Winter Bird Surveys
- Reptile Surveys
- Landscape and Ecology Enhancement Plan
- Breeding Bird Surveys
- Bat Surveys
- Carbon/ Climate Assessment
- Air Quality Assessment
- Arboricultural Survey and Report
- Contamination Testing

Potential Ground-Mounted Solar Biodiversity Benefits:

- Creation of species-rich grassland beneath and around panels
- New hedgerow, tree, and wildflower planting
- Habitat corridors for birds, pollinators, and small mammals
- Reduced soil disturbance and lower chemical inputs
- Opportunities for dual land use through agrivoltaics and low-intensity grazing

Anaerobic Digestion Biodiversity Benefits May Include:

- Production of digestate, which can reduce reliance on synthetic fertilisers
- Improved nutrient recycling and soil health
- Opportunities for landscape planting and habitat enhancement around the facility



Key Components

PV Modules

PV modules are mounted in south-facing arrays spanning east to west across the site. Inter-row spacing of approximately 3.5m supports continued agricultural use through agrivoltaics.



Biogas pipe

Biogas pipework carries gas from the digesters to end users such as the Combined Heat and Power (CHP) unit, which converts the biogas into useful electrical and thermal energy.



PV Mounting Structures

Steel substructures are piled directly into the ground, requiring no additional foundations. Frames stand approximately 2.5m high, sloping down to a lower edge approximately 0.8m above ground.



Flare

A flare is required on all AD sites to ensure that when the CHP unit is offline for maintenance, all biogas is safely combusted and not released into the atmosphere.



Inverters

Inverters convert DC electricity generated by the solar panels into AC. Centralised inverters are housed in a small building, while string inverters are mounted at the end of each module row.



Silage Clamps

Silage clamps are used to store agricultural crops for use throughout the year. This is common practice on livestock farms and ensures a consistent feedstock supply to the digesters.



Transformers

Transformers step up the low-voltage inverter output to high voltage, which is fed via underground cables to the substation. They may be co-located within the same structure as the inverter unit.



Gas Holder

The gas holder captures biogas as it is produced within the digester. Twin membranes maintain a safe low pressure — the outer is always inflated while the inner expands and contracts with production and use.



Fencing

A wire stock fence is used along the site perimeter, providing sufficient security to permit livestock grazing while minimising visual impact on the surrounding landscape.



Digester

The digester is a sealed, heated and mixed vessel that creates the optimum environment for biological processing. Feed is added regularly and digestate is removed to maintain a constant level within the tank.



Substation

The substation controls, protects and isolates the electrical equipment required by the solar farm.



CHP Unit

The Combined Heat and Power Unit (CHP) use the biogas to produce heat and electrical power. The engine is set within an acoustic enclosure and is remotely monitored 24 hours per day.



FAQs

GMPV

Battery

AD



What is the impact on the land?

Panels are mounted on frames with minimal ground disturbance and no concrete needed. Grass and crops grow beneath bifacial panels, soil health improves over time, and sites are managed to enhance biodiversity.

Do solar farms work in more northern locations?

Yes. PV performs very well in cooler climates. Andreas receives 12% more sunlight than Ronaldsway, is flat with no peripheral shading, and benefits from coastal refracted light.

What happens to the panels in high winds?

Arrays are designed and engineered to withstand localised wind loading and are resistant to the severest storms.

What disruption is caused managing a solar array?

Very little. Routine checks are bi-annual, with most land management carried out by grazing sheep.

Do all solar panels come from China?

China dominates the market, manufacturing 80% of panels and supplying 95% of solar wafers and cells, but not all panels are Chinese-made.

Are Vanadium Flow batteries safe?

Yes. Non-flammable water-based electrolytes mean no fire risk, making them ideal for long duration energy storage.

Which type of battery is best?

Flow batteries suit long duration steady discharge; lithium batteries are more compact and dynamic, better for shorter-term specific power needs.

Could the AD plant explode?

Risk is carefully managed through DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) assessment, ATEX-compliant equipment, trained staff and sealed digesters. The plant operates to UK safety standards with DEFA.

Will the AD plant smell?

No. The process occurs in sealed vessels. Strict environmental regulations prevent the release of odorous gases.

What will be fed to the AD plant?

A combination of purpose-grown energy crops and agricultural wastes and residues. No food or human waste will be fed to the plant.

Can traditional farming continue under solar panels?

Yes. Most sites are grazed by sheep, but can also support crops, fruit, trees and larger livestock. This is known as Agrivoltaics.

Do solar farms cause glare?

Panels absorb ~95% of light and are less reflective than tarmac. A site-specific glare evaluation is carried out to mitigate any risk through design.

How long does construction take?

Approximately 12 weeks to construct the array and a further 12 weeks to complete electrical works and energise the site.

What happens when the solar array reaches end of life?

Arrays last 40+ years and can be re-energised beyond this. If decommissioned, the site returns quickly to agriculture and up to 99% is recyclable.

Are Lithium Ion batteries safe?

Yes, if well designed. Thermal runaway risk is managed through cell-level containment, active fire suppression, smart battery management systems, and stable LFP chemistry.

Why are batteries needed?

To balance the electricity network, store excess power, and ensure continuity of supply if the primary grid fails.

Can batteries be recycled?

Yes. ~90% of minerals can be recovered from lithium-ion batteries, and vanadium flow batteries are ~97% recyclable, including 100% of the electrolyte.

Will the AD plant be noisy?

AD plants are designed with acoustic attenuation. Noise levels will be no greater than those of a typical livestock farm, with acceptable levels agreed through planning.

Will the AD plant create significant additional traffic?

Traffic movements will increase but will be seasonal and controlled. The farming co-operative supplying feedstock will agree transportation routes and practices in advance.



Further Information



Email

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Thank You

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