BATTERY BOX
WINFREY BOX
ENERGY STORAGE SYSTEM

PLANNING STATEMENT

AMP CLEAN ENERGY

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1.0 Introduction

1.1 Overview

This application seeks permission for a 200kW (800kWhr) Energy Storage System (ESS) ('Battery Box') ("the proposed development") at Sir Halley Stewart Playing Field, Winfrey Avenue, Spalding, PE11 1DA. AMP Clean Energy is developing Battery Boxes across the UK to provide a low carbon, flexible and de-centralised source of electricity that benefits local communities, businesses, and homes. Battery Boxes are micro energy storage assets, ~24sqm, equivalent to roughly 2 car parking spaces in size.

AMP Clean Energy build, fund, own and operate renewable and low carbon energy facilities and flexible power assets across the UK. We have over 225 assets and provide service and maintenance to over 1,000 customer sites and have 175 staff nationwide.

1.2 What is a Battery Box?

A Battery Box is an ESS that imports electricity from the local electricity network when demand for electricity is low or when there are high levels of renewable energy available. It then exports that electricity back to the grid when required in periods of high demand. This provides a solution to the growing need for flexibility and helps address concerns regarding grid reliability prompted by an increase reliance on intermittent generation of the electricity system.

Battery Boxes connect into the low voltage (LV) network, this is the lowest and most local point in the system where there is an increasing demand for electricity with the electrification of transport and heating systems. Stored electricity from the Battery Box will be exported and consumed in the locality of the box (when it is required).

AMP Clean Energy is developing up to 1,000 Battery Boxes in the UK over the next 3 years. For reference we have included a list of recent Battery Box planning consents in Appendix 01.

1.3 Why do we need Battery Boxes?

The UK's electricity system was traditionally dominated by a small number of large power stations fuelled by fossil fuel (namely coal and natural gas). However, the system is now becoming increasingly supplied by intermittent sources of renewable energy such as wind and solar power.

Renewable power generation does not always match when the demand for electricity is highest. To overcome this, we need a more flexible energy system that allows to shift renewable energy to the periods of the day when the demand for power is at its greatest. And as the UK builds more and more renewable projects, increasingly there are times when the amount of renewable electricity on the system is greater than the demand for it.

ESS's allow this 'excess' renewable electricity to be stored and used later when low carbon sources are unable to generate enough electricity (i.e., when it isn't windy and sunny). By doing so ESS's can prevent the need to turn on fossil fuel generators and allow the UK to maximise the use of renewable power and to facilitate the UK's transition to net-zero.

In addition, ESS's can provide services to both National Gird (NG) (who operate the transmission network) and Distribution Network Operators (DNOs) who operate the local electricity networks. For example, they can help maintain services during network outages, support the network frequency and 'black start' which helps energise a network following a power cut. ESS also can replace the need for wider network upgrades. This reduces the cost for

all bill payers and also the inconvenience of road works and building works associated with replacing electricity cables and substations.

1.4 The Benefits of Battery Box

Urban, suburban, and industrial areas consume large amounts of energy, however, are not well suited for large scale storage assets (typically requiring one acre or more), solar farms (typically requiring 25 acres or more) or large wind turbines. Battery Boxes have a comparative small footprint and connect into local Low Voltage networks making them uniquely suited to these areas.

In doing so they can provide the following benefits:

1.4.1 Reduce Carbon Emissions

By charging the ESS during periods of high renewable generation you charge up the Battery Box with low carbon energy. When demand is high and renewable power is not otherwise available, rather than turn on a fossil fuel power plant, ESSs can export the stored energy. This reduces the amount of carbon used on our energy system.

Whilst the amount of carbon saved each year will vary with changing weather and demand patterns, AMP Clean Energy expect each Battery Box will save 160 tonnes of Carbon each year and 4,800 tonnes of carbon over the project Lifecyle.

1.4.2 Improve Energy Security

ESS can displace the need for fossil fuels and in doing so reduce the need to important natural gas from other parts of the world, meaning the UK is less reliant on foreign energy sources.

1.4.3 Reinforce Local Electricity Networks

An average home may use up to 1kWh in any given hour. A battery box stores 800kWh and has the potential to power 200 homes for four hours where there is a disruption to the supply to an area.

Also, as people electrify the heating in their homes and switch to Electric Vehicles the demand on local networks has never been greater. ESS's can provide additional capacity to those local networks when demand is high.

2.0 Site Information and Background

2.1 Location and Planning History

The proposed development is located at Sir Halley Stewart Playing Field, Winfrey Avenue, Spalding, PE11 1DA. The grid reference of the site is TF 24708 23054 and the site location is shown on drawing reference: Winfrey Box – Location Plan, accompanying the application.

The site is a vacant flat grassy area at the edge of the playing field. The location was agreed with South Holland Council as being the most appropriate. It is at the edge of the site so will not impact the site and is close to the existing electrical substation where the project would connect to the grid.

An online search of South Holland District Council planning portal showed no relevant applications associate with the proposed site.

2.2 Development Drawings

The planning application is accompanied by the following drawings:

- Site Location Plan
- Site Layout Plan
- Battery Equipment – Plans and Elevations
- Electrical Cabinet – Plans and Elevations
- Paladin Fence Elevations

2.3 Site Selection

Suitable available land for energy development is not easy to find. A suitable site must be within 50m of an existing substation or a large 3 phase low voltage cable to allow for a viable electrical connection.

Sites must also have available space and a landowner who is prepared to host a battery box. However, having a small footprint makes battery boxes ideal for urban and built-up areas in which other renewable technologies are not suited.

This site has been carefully selected for the following reasons:

- Proximity to local grid (~25m to electrical substation)
- Suitable flat development land available
- Close to local electricity demand

2.4 Development Description

The proposed development will consist of:

- Installation of a concrete plinth foundation;
- Installation of the battery containerised units and associated equipment;
- The construction of a new fence surrounding the Battery Box;

Full site layout and equipment drawings accompanying the application.

2.4.1 Construction

The construction of the site would take approximately 4 weeks. The electrical equipment is manufactured off site and is lifted in to position on the concrete plinth before the electrical connection is complete.

2.4.2 Operation

Battery Boxes provide additional power and flexibility to the local electricity networks when it is needed most; typically, during periods of high demand (typically know as 'peak periods'). The ESS imports electricity when there is a surplus, for example a sunny and windy day during summer when electricity produced by wind turbines and solar panels exceeds real-time demand. Stored energy is then exported back to the local networks at peak periods (typically evenings between 16:00 and 20:00, Monday to Friday).

3.0 Policy Review and Context

The below highlights the governments support for flexible energy developments and specifically Energy Storage and highlights their importance in the ever-changing energy system as we move to a more renewables dominated electricity network.

3.1 National Grid Future Energy Scenarios

Nations Grid's Future Energy Scenarios[1] clearly set out that flexibility is crucial to operating the energy system where the supply and demand of energy needs to be balanced.

In July 2021, National Grid Electricity Systems Operator (ESO) published its Future Energy Scenarios (FES) report in which flexibility and energy storage are predominant themes and point to the need to develop both small-scale localised ESS (like the proposed development) and larger storage. This will then in turn reduce the overall dominance of large-scale transmission connected generation (traditionally coal-fired power stations), through the storage of renewable energy at times of lower demand, to then be used at peak times.

ESS's respond rapidly to changing supply and demand conditions which is what a system with a high level of intermittent (renewable) generation needs. Battery Boxes ability to store and provide peak / flexible services is key to enabling the growth of renewables and therefore helps to achieve the phase-out of out-dated technologies such as coal at the same time as minimising the risk of electricity shortages.

The FES expands on the role that storage will play in the UK's energy portfolio, specifically stating:

> *"Falling costs of batteries and changing system needs mean we expect a greater use of batteries that can deliver maximum power output for two to four hours. This increases the use of battery storage for shifting demand within the day and managing constraints on the network.*
>
> *Storage will play a key role in managing renewable generation output and meeting peak demands on the electricity system…"* (p.201)

3.2 Transitioning to a net zero energy system – Smart Systems and Flexibility Plan 2021

The Department for Business, Energy, and Industrial Strategy (BEIS) and Ofgem published in July 2021 a paper called Transitioning to a net zero energy system – Smart Systems and Flexibility Plan 2021[2].

The paper sets out that the electricity system will need significant levels of flexibility *"… so that it can be almost entirely run-on low carbon energy sources. The need for flexibility will rapidly increase as variable renewable power replaces fossil fuel sources… Around 30GW of low carbon capacity in 2030, and 60GW in 20250 may be needed to maintain energy and security, and cost effectively integrate high levels of renewables"*. The report further estimates flexibility will reduce the costs on our energy system by up to £10bn a year.

Regarding consumer costs, the paper states *"Battery storage can be deployed on the grid, and also at a domestic and commercial scale enabling consumers to reduce their energy bills and support the integration of low carbon transport and heating"* (p. 38). It is therefore vital for the proliferation of renewable and the net zero target that we build and develop flexible, local energy storage systems.

[1] National Grid ESO, *Future Energy Scenarios*, 2021. *Available at: Future Energy Scenarios 2021 | National Grid ESO*
[2] https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021

3.3 National infrastructure Strategy

In November 2020 the Government published its National Infrastructure Strategy[3]. On page 50, it states *"To achieve net zero by 2050, the power system will need to be virtually carbon free and significantly larger to cope with the additional demand from electrification in transport heading, and some industrial processes. This expanded system will require increase investments in networks infrastructure, sources of flexibility, such as interconnection, demand response and storage, and enough low carbon generation capacity to provide the vast majority of the UK's electricity needs."*

3.4 Energy White Paper: Powering Our Net Zero Future

The government published its Energy White Paper: Powering Our Net Zero Future[4] (published December 2020), where it states, on page 72, that *"Gas-fired power stations have traditionally provided the flexibility needed to match supply to demand at peak hours, or when renewable output is low. Increasingly flexibility will come from new, cleaner sources, such as energy storage in batteries."*

3.5 National Planning Policy Framework

The National Planning Policy Framework (NPPF) (revised September 2023)[5] seeks to achieve sustainable development and set three overarching interdependent objectives for the planning system of: building a strong, responsive, and competitive economy; supporting strong, vibrant communities; and contributing to protecting and enhancing the natural, built, and historic environment (para 8).

Paragraph 152 highlights the need to support energy development that contributes to security and stability of supply:

> *"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contributed to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversation of existing buildings; and support renewable and low carbon energy and associated infrastructure."*

Paragraph 155 also states:

> *"To help increase the use and supply of renewable and low carbon energy and heat, plans should:*
>
> *a) Provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);*
> *b) Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and*
> *c) Identify opportunities for development to draw its energy supply from decentralised renewable, or low carbon energy supply systems for collocating potential heat customers and suppliers."*

Paragraph 158 of the framework states:

[3] HM Treasury, *National Infrastructure Strategy*, 2020. *Available at:* National Infrastructure Strategy - GOV.UK (www.gov.uk)
[4] Department for Business, Energy & Industrial Strategy, *Energy white paper: Powering our net zero future*, 2020.*Available at:* Energy White Paper (publishing.service.gov.uk)
[5] Ministry of Housing, Communities & Local Government - *National Planning Policy Framework, 2012 (revised 2023)*. *Available at:* National Planning Policy Framework - GOV.UK (www.gov.uk)

When determining planning applications for renewable and low carbon development, local planning authorities should:

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions;

The UK's electricity generation mix continues to diversify, which means the need for flexibility is growing The UK is becoming increasingly reliant on intermittent sources of electricity generation such as wind, hydro and solar. In 2020, a record 59.3% of electricity was generated from low carbon sources[6]. By enabling the storage, and future flexible use of electricity when renewable generation output is high, but demand is low, the proposed development is designed to further promote the penetration of renewables into the UK's electricity networks.

In turn this support allows inflexible fossil-fuel fired plants to be decommissioned; thereby reducing Greenhouse Gas emissions and furthering Climate Change mitigation efforts.

3.6 National Policy Statement for Energy

The overarching National Policy Statement for Energy (EN-1)[7] which sets out national policy for energy infrastructure in the UK, similarly, echoes support for the development of Energy Storage infrastructure by also seeking to promote resilience in the supply of energy. Paragraph 2.2.20 states:

"It is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy. To manage the risk to achieving security of supply we need:

Sufficient electricity capacity (including a greater proportion of low carbon generation) to meet demand at all times… Demand for it [electricity] must be simultaneously and continuously met by its supply. This requires a safety margin of spare capacity to accommodate unforeseen fluctuations in supply or demand."

As the grid becomes greener, and the UK becomes increasingly reliant on intermittent sources of electricity generation, such as wind and solar, the system needs flexible dispatchable technologies, like energy storage, in order to maintain network stability and security of supply. Paragraph 3.3.12, recognises that:

"…there are a number of other technologies which can be used to compensate for the intermittency of renewable generation, such as electricity storage…"

However, EN-1 also acknowledges that:

"although [the] Government believes this technology will play important roles in a low carbon electricity system, the development of these technologies [such as commercial batteries] at the necessary scale has yet to be achieved."

Tremendous advances have, and continue, to be made in energy storage technology since the publication of the Nation Policy Statements. Yet there remains a strong and recognised need for more storage infrastructures, like the proposed development, to enable an increase in the storage of excess renewable generation. In turn, this allows a greater number of renewables to penetrate the UK's electricity networks and facilitate a swifter transition towards net-zero. Battery Boxes therefore play a key role in the ongoing rollout of renewable, intermittent, technologies.

[6] Department for Business, Energy & Industrial Strategy – *Digest of UK Energy Statistics Annual data for UK, 2020. Available at:* Digest of UK Energy Statistics (DUKES) 2020 - GOV.UK (www.gov.uk)

[7] *Department of Energy & Climate Change – Overarching National Policy Statement for Energy (EN-1), 2011. Available at:* National Planning Policy Framework - GOV.UK (www.gov.uk)

The Office of Gas and Electricity Markets (Ofgem) and Business Energy and Industrial Strategy (BEIS) published an open letter in July 2019[8] about the importance of connecting flexibility capacity at distribution level. The opening paragraph notes:

> *"To remain fit for purpose in this transforming system, energy networks will need to evolve too. Flexibility will be crucial, facilitating significant deployment of renewables, electrified transport and, potentially, electrified heat. A smarter and more flexibly system could save the UK £17-40bn by 2050, and many of these benefits will be realised at the distribution level."*

This letter makes it clear that flexibility in the networks is essential in supporting the on-going deployment of renewable generation resources. Battery Box provides the network with this flexibility.

3.7 Local Planning Policy

South Holland has acknowledged the threat of Climate Change to its community and committed South and East Lincolnshire to become net zero by 2050, publishing their Climate Change Strategy in 2022[9]. The report sets out the council's initial action plan in how they are actively trying to reduce carbon emissions, highlighting the importance of supporting renewable energy and technology innovation in the energy sector:

"Engagement with the Distribution Network Operators will be essential as will the ability to accurately predict potential expansion and take up of particular technologies to ensure the energy infrastructure is able to meet demand." (page 15)

The proposed development will help the council work towards this aim. In addition, AMP Clean Energy expects each Battery Box to save 160 tonnes of carbon each year, and 4,800 tonnes of carbon over the project lifecycle.

[8] Business, Energy & Industrial Strategy and Ofgem - *Letter from BEIS/Ofgem to Energy Networks Association, 2019. Available at: Open Networks project: letter from BEIS and Ofgem to the Energy Networks Association (ENA) - GOV.UK (www.gov.uk)*

[9] South Holland District Council – *Climate Change Strategy: Final – Spring, 2022. Available at: South Holland / ClimateChange - GOV.UK (www.gov.uk)*

4.0 Environmental Review

A Battery Box is a small development and appears much like other utility structures, such as small substations, gas kiosks, and telephone exchanges. As such, alongside careful site selection, the potential impacts are very limited, and are offset by the significant benefits the projects offers.

4.1 Impacts

Aspect	Comment
Landscape	Impacts on landscape and visual amenity are not considered to be significant due to the nature of the surrounding area and the small-scale nature of the development. The proposed development is located on an unused verge, adjacent to a secondary substation. The site is screened from the road by an existing wall and a line of trees. The development is set at the edge of the playing field and will appear much like the existing utilities infrastructure on site.
Ecology	The site is not within an AONB, SSSI or Greenbelt and nor is it within any other designations. The proposed development will not have a significant impact on the local ecology, the development will be situated on a vacant grass verge with no existing vegetation. The site will be positioned away from the existing trees.
Land Quality	As the application site is within an existing developed area and minimal ground-breaking is required, there is no anticipated land quality issues.
Cultural Heritage	As the development involves minimal sub-surface construction work, no sub-surface archaeological concerns are therefore anticipated. Given the location and small-scale nature of the development, it is not envisaged that there will be any wider heritage issues from this proposal.
Traffic and Transport	The development will be using the existing accessway. Traffic generation during construction and operation of the development will be minimal. Construction is anticipated to last for approximately 4 weeks. A total of 6 HGV movements (3 arrival, 3 departures) are expected to site. Consequently, the volume of trips generated by the site during construction will be negligible. The ESS is controlled remotely, therefore during the operational phase visits to site are only anticipated to response to a fault or maintenance activities. The additional road traffic cause by the development is negligible.

Air Quality	The battery units do not produce any air emissions and therefore do not impact air quality.
Noise	There will be no impact in terms of Noise and Vibration, any noise arising from the equipment will be minimal and indistinguishable from the background levels.
Health and Safety	The energy storage systems are based on highly stable Lithium Iron Phosphate battery cell and include a battery management system that monitors the system 24 hours a day. An AI-powered internal short circuit detection system, temperature sensor and built in current and voltage sensors all provide early warning of a malfunction and permit automatic or switch off. The system is capable of operating in extreme temperatures between -30°C and 55°C well within the normal climatic environment of the UK.
Drainage	The proposed development will be situated on an area that is currently landscaped and, once complete, the small concrete plinth will be surrounded be permeable landscaped surfaces. Storm water runoff from the battery box and the concrete plinth will shed onto this permeable surface and discharge to the ground. The area of this development is very small at just 24m^2 and therefore the total volume of runoff generated from this development area will also be small. Given this it is considered that there will be sufficient capacity in the adjacent soils to receive and hold these flows prior to deeper infiltration or shallow subsurface flows towards local drainage networks. As such the proposed scheme will only result in very localised and minor impacts and the effect of the scheme on runoff rates locally will be negligible. Given the minor nature and small scale of the proposed development further consideration of storm water drainage and the provision of controls is not considered to be necessary or appropriate.

5.0 Conclusion

The proposed development is for a 200kW Energy Storage System and would be one of many ESS's being developed by AMP Clean Energy around the UK. Battery Boxes provide a flexible and decentralised additional source of local grid capacity to address the growing need for flexibility as the UK's generation mix continues to diversify and rely on intermittent renewable energy generation.

The growth of intermittent renewables signifies the need for greater system flexibility to ensure the stability and security of our electricity supply. The ability to dynamically respond to changes in supply and demand is paramount to the resilience of our electricity networks. The proposed ESS will provide resilience to the local grid network by providing a secure and stable electricity supply and emergency backup power which will support and benefit local homes and businesses.

The location and small footprint of the proposed development means it will have no impact on the surrounding site, it will however benefit the local area and national energy network. The overall contribution of the development towards the delivery of the social and economic benefits to the site and the wider surrounding area is in compliance with local and national policies.

Accordingly, South Holland District Council is respectfully requested to approve this Planning Application.

Appendix 01: List of Battery Box Consents

AMP Clean Energy is developing up to 1,000 Battery Boxes in the UK over the next 3 years. For reference we have included a list of recent Battery Box planning consents below.

	Project Name	Local Planning Authority	Reference
1	Grange Box	Colchester Borough Council	222430
2	Heysham Box	Sefton Council	DC/2022/01871
3	Finmere Box	Eastbourne Borough Council	220755
4	Tame Box	Tameside Metropolitan Borough	22/00811/FUL
5	Creswell Box	Bolsover District Council	23/00182/FUL
6	Whitbrook Box	Rochdale Borough Council	23/00104/FUL
7	Breock Box	Cornwall Council	PA22/10869
8	Whittle Box	Dorset Borough Council	P/FUL/2022/05957
9	Nobel Box	Stevenage Council	23/00041/FP
10	Westthorpe Box	North East Derbyshire Council	23/00283/FL
11	Bartley Box	Birmingham City Council	2023/02936/PA
12	Storforth Box	Chesterfield Borough Council	CHE/23/00461/FUL
13	Brownfields Box	Welwyn Garden City Council	6/2023/1616/FUL
14	Chandos Box	Buckinghamshire Council - Aylesbury Vale Area	23/02026/APP
15	Miners Box	Dover District Council	23/01090
16	Forge Box	Cornwall Council	PA23/08866
17	Penrod Box	Lancaster City Council	23/01305/FUL
18	Woodthorpe Box	Spelthorne Borough Council	23/01489/FUL
19	George Box	Mid Devon Council	23/01592/FULL
20	Bewsley Box	Mid Devon Council	23/01615/FULL
21	Colchester Box	Colchester Borough Council	232193

22	Guildford Box	Cornwall Council	PA24/00207
23	Brassey Box	Shropshire Council	24/00492/FUL
24	Maesbury Box	Shropshire Council	24/00510/FUL
25	Redgate Box	Mid Suffolk & Babergh District Council	DC/24/00442
26	Cromer Box	North Norfolk District Council	PF/24/0363
27	Merrivale Box	West Devon Borough Council	0533/24/FUL
28	Pool Box	Powys County Council	24/0161/FUL
29	Heol Box	Powys County Council	24/0218/FUL
30	Brookhill Box	Bolsover District Council	24/00153/FUL
31	Skomer Box	Pembrokeshire County Council	23/0990/PA
32	Lockleaze Box	Bristol City Council	23/00454/F