



Hilfield Solar Farm and Battery Storage

Non-Technical Summary

on behalf of Elstree Green Limited

Prepared by [Aardvark EM Limited](#) | December 2020 | Document Reference: R006



NON-TECHNICAL SUMMARY ENVIRONMENTAL STATEMENT




Accompanying a planning application for the construction and operation of a grid-connected solar photovoltaic farm with battery storage, other ancillary infrastructure, access, landscaping and biodiversity enhancements on Land to the North East and West of Elstree Aerodrome, Hertfordshire

DECEMBER 2020

Prepared By



Project Quality Control Sheet

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Location: Land to the North East and West of Elstree Aerodrome, Hertfordshire

Grid Reference: TQ 515093 196697 (centre of application site)

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1 Introduction

This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES) accompanying the detailed planning application submitted to Hertsmere Borough Council (HBC) as the Local Planning Authority (LPA) by Aardvark EM Ltd on behalf of Elstree Green Limited (“the Applicant”).

Planning permission is being sought for the construction, operation and removal (after 35 years) of a renewable energy scheme comprising a solar farm and battery storage facility (“the Proposed Development”) on land to the northeast and west of Elstree Aerodrome in Hertfordshire (“the Site”).

The Applicant is a wholly owned subsidiary of Enso Green Holdings Ltd, a partnership between Enso Energy and Macquarie’s Green Investment Group (GIG). Enso Energy is a leading UK energy developer and GIG is a global leader in renewable energy and both businesses have substantial expertise, experience and funding in the energy sector.

Further information on the Applicant and on the Proposed Development (including the planning application submission documents) is available at <https://www.ensoenergy.co.uk>

The Proposed Development is made up of several components that work together to generate and store renewable energy and would comprise:

- Solar panels c. 3 metres high that convert sunlight to electrical energy. The panels are ground mounted on frames. The panels produce solar power from both the top and bottom sides of the panel;
- Sixteen inverter/transformer stations c. 3 metres high, spread evenly across the Site and which convert the captured solar energy into electricity capable of being fed via underground cables into a new on-site substation. From here it is then exported to the National Grid Elstree Substation, again via an underground cable,; and
- Twenty battery storage containers also c. 3m high located next to the on-site substation that store the solar produced electricity in times of lower demand so that it can then be released into the National Grid when demand is higher.

More information on the different elements of the Proposed Development is included in Section 2 of this NTS.

The Site location is shown at Appendix 1.

2 Environmental Impact Assessment

The aim of Environmental Impact Assessment (EIA) is to protect the environment by ensuring the LPA, when deciding whether to grant planning permission for a proposed development which is likely to have significant effects on the environment, does so in full knowledge of what the likely significant effects will be.

The EIA process is systematic and objective and provides for the identification, assessment and mitigation (as far as is reasonably practicable) of the possible significant environmental effects of a project. The EIA process and its outcomes are reported in the ES (Document Ref: R007) and its Appendices (Document Ref: R008) to the decision maker, HBC, its advisors and the public.

The process of deciding if EIA is required is known as Screening. The formal Screening Opinion of HBC was sought for the Proposed Development and the Council confirmed that an EIA was required.

To determine what environmental topics should be considered as part of the EIA process, a formal scoping process is undertaken with the LPA and the Council confirmed that the only topic that should be addressed in the ES as it have the potential to have significant effects was Aviation Safety due to the proximity of Elstree Aerodrome:

The ES has been prepared by competent experts as required by the EIA process. This NTS is provided to allow a wider understanding of the environmental effects of the project as explained in the ES.

Other separate assessment reports also accompany the Application as requested by the LPA and these include:

Document	Author	Reference
Construction Traffic Management Plan	Transport Planning Associates	R005
Landscape and Ecological Management Plan	LDA Design and BSG Ecology	R009
Flood Risk Assessment and Drainage Strategy	RMA Environmental	R010
Noise Impact Assessment	Inacoustic	R011
Glint and Glare Assessment	Pager Power Limited	R012
Ecological Impact Assessment Report (including Biodiversity Net Gain Statement)	BSG Ecology	R013
Agricultural Land Classification Report	Askew Land and Soil Limited	R015
Ground Investigation Assessment	R M Cameron Environmental Services Ltd	R016
Heritage Desk Based Assessment	Headland Archaeology	R017
Landscape and Visual Impact Assessment	LDA Design	R018

A Statement of Community Involvement (Document Ref: R014) has been prepared to explain the process of public consultation undertaken before the submission of the Application and how that engagement has informed the final design of the Proposed Development. The overall design and

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access proposals for the Proposed Development, and how they evolved through an iterative process, are set out in the Design and Access Statement (Document Ref: R004)

The merits of the Application as considered against relevant national and local planning policy are set out in the Planning Statement (Document Ref: R003).

3 Overview of the Project

3.1 The Site Location

The Site is at OS Grid Reference TM082466 (the approximate centre of the Site). Overall, the Site area is approximately 130 hectares and is subdivided into two main field parcels: a “western parcel”; (grid reference: TQ151965 (centre of parcel)) and comprises Field 1 to 5 and a “eastern parcel” (grid reference: TQ165975 (centre of parcel)) and comprises Field 7 to 20 (Field 6 was removed from the scheme during the design process).

The Site is located approximately 3km east of Watford and approximately 2km west of Borehamwood and sits within an agricultural landscape, surrounded by energy and transport infrastructure, including the adjacent 400kV Elstree National Grid Substation, London Elstree aerodrome and major transport corridors of the M1 and A41. The Midland Main Line railway is located to the east, approximately 660m from the Proposed Development at its closest point

The Site is located wholly within the London Metropolitan Green Belt (LMGB). The Hertsmere Borough Council Local Plan Core Strategy (2013) identifies that 80% of the borough falls within the Green Belt.

3.2 The Development Site

The Site is semi-rural in character with some localised intrusion of man-made features. There are no statutory landscape, heritage or ecological designations within the Site.

The Site is accessed via Hilfield Road and Butterfly Lane.

The Site wholly comprises Subgrade 3b agricultural land, as identified by the Agricultural Land Classification (ALC), which is not classified as Best and Most Versatile (BMV) agricultural land.

The Site has been subject to ‘historical landfilling activity’ which is recorded in the southwestern and western areas of the eastern Site parcel (Fields 17, 18, 19 and 20). It is likely that landfilling activity took place pre-1974.

The Site is predominantly located in the Parish Council area of Aldenham, the western parcel does not fall within a parish but the whole Site is within the administrative area of HBC.

The field network within the Site is characterised by hedgerows, hedgerow trees and woodland. The Site is gently undulating with the western parcel rising to its highest elevation in the western area of the parcel and slopes in a general northwesterly direction. The eastern parcel rises to its highest elevation in the southern area and slopes in general northeasterly direction.

Hilfield Brook flows partly along the boundary of, and through Field 1, in a northwesterly direction, and a series of drains route into Fields, 2, 3 and 5. A series of drains also flow through the eastern parcel, from a watercourse which routes through the parcel in a northeasterly direction, which forms part of the Tykes Water and Borehamwood Brook, approximately 700m northeast of the eastern parcel. There are approximately six ponds within the Site and a further two immediately adjacent to the Site boundary.

The Site is crossed by a network of Public Rights of Way (PRoW) that remain unaltered by the Proposed Development comprising, restricted byways, bridleways and footpaths.

3.3 The Proposed Development

The main element of the Proposed Development is the construction, operation and decommissioning of a renewable energy scheme comprising a solar farm and battery storage facility. It would supply up to 49.9MW of clean renewable electricity to the National Grid.

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It proposes the use of the best available technology, delivering greater levels of solar efficiency by utilising bifacial panels which increase continuous electrical productivity by 4% when compared to traditional monofacial systems.

The battery storage facility would be utilised to reinforce the power generation of the solar farm, maximising renewable energy production from the Site whilst providing security of supply.

The proposed layout is provided at Appendix 2.

Over the course of the scheme design process, the project team have continuously refined the scheme design to address feedback from the Council, its advisors and the public.

The Proposed Development would operate for a 35-year period with sheep grazing around the solar panels maintaining the Site's agricultural function. At the end of the operating period the built infrastructure would be removed, and the Site continues in agricultural use.

Solar panels would be laid out in rows with gaps of approximately 3-4.5m between each row. Panels are mounted on a frame made of galvanized steel or aluminium. The metal framework that supports the solar panels would be fixed into the ground by posts centred c. 6m apart. The posts would be pile-driven (like a fence post) into the turf to a depth of around 2-2.5m. This approach means no concrete is needed to secure the system and the posts can be easily removed. At their lower edge panels would be approximately 0.8m from the ground and up to approximately 3m at their higher edge.

The 16 inverter/transformer stations are housed within green metal containers. The same container type is used to house the battery storage units which are not stacked and are located next to the proposed on-site substation in the western parcel.

All cabling between the solar panels, the inverter/transformer stations, the on-site substation and the connecting the two parcels would be in underground trenches.

To keep the Proposed Development secure and prevent criminal damage deer fencing c. 2.2m high would be installed together with CCTV and/or infra-red cameras to provide 24-hour surveillance. The cameras would be inward facing only on poles up to 2.4 m high. No permanent operational or security lighting is proposed within the Site.

A package of landscaping and biodiversity benefits are proposed (see Appendix 3 for the Landscape and Ecological Enhancement Plan) and the Landscape and Ecological Management Plan (LEMP) (see Document Ref: R009 for a full explanation) including the following:

- Significantly enhance the overall biodiversity value of the Site, including for protected and notable species and habits and locally designated sites;
- The increase in biodiversity stemming from the Proposed Development when compared to the ecology which exists on Site at present is significant and has been calculated using approved methods to be a very significant with 39.54% habitat biodiversity net gain and 23.3% hedgerow biodiversity net gain;
- Protect and enhance the existing characteristics and features of value of the Site including the field structure, mature trees, hedgerows and ditches;
- Create a strong structural planting framework and protect, restore and maintain the existing vegetation network, which would also provide enhanced screening of close- and middle-distance views of the Proposed Development;
- Create greater opportunities for protected species' and species of conservation concern;
- Significantly enhance the Green Infrastructure connectivity within the Site and wider landscape, contributing positively to aspirations set out with the Hertsmere Green Infrastructure Plan (2011);

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- Facilitate opportunities for engagement with the natural environment and renewable energy;
- Protect and enhance recreational amenity from PRow; and
- Secure the long-term future management of the Site for the duration of the Proposed Development.

Beneath the solar panels new grassland habitats will be planted and managed by sheep grazing, the existing hedgerows and trees on site will be retained, protected and enhanced through positive management and many opportunities will be created for protected species and species of conservation concern such as through bird nesting boxes, bat roosting boxes and tussocky grassland with wildflowers in the nature areas.

All existing footpaths within the Site will be retained, protected and enhanced and two new permissive footpaths will be provided. Interpretation boards will be provided at footpath junctions allowing for opportunities to better understand the positive contribution the Proposed Development will make in adapting to climate change.

Construction of the Proposed Development would be completed in approximately 40 weeks, with HGV deliveries to the western field parcel via the existing access at Hilfield Farm, and to the eastern field parcel via the existing improved access at Slade Farm on Butterfly Lane.

It is anticipated that there will be 1,084 deliveries by HGV (comprising 16.5m articulated and 10m rigid vehicles) including construction traffic associated with constructing internal access roads, general movements and other site equipment during the construction period. It is expected that there will be an average of around five HGVs per day accessing the Site over the construction period (10 two-way movements).

Once operational there would only be one or two vehicle visits per month comprising a transit style van, accessing the Site via Hilfield Lane and Butterfly Lane.

3.4 Climate Change

The Government has recently set a legally binding target of achieving net-zero greenhouse gas emissions by 2050. To help achieve this the Government is rapidly seeking to move from an economy dependent on traditional finite fossil fuel power to increasing amounts of secure, resilient renewable and low carbon energy, including large scale solar power. The Proposed Development would make a significant contribution to reducing carbon emissions and achieve the very ambitious greenhouse gas emissions reduction targets.

The Proposed Development would supply up to 49.9MW to the National Grid, providing the equivalent annual electrical needs of approximately 15,600 family homes in Hertsmere. The anticipated CO₂ displacement is around 25,400 tonnes per annum, which represents an emission saving equivalent of a reduction in c.8,100 cars on the road every year. It is also estimated the solar farm will increase the total amount of renewable electricity generated in Hertsmere from 5.4% to 20%, bringing Hertsmere closer to the national average of 33% electricity generated from renewable sources.

3.5 Alternatives

The alternatives considered as part of the project's evolution included the site location, the scheme design, and technology choice.

Location is driven first and foremost by the need to be close to an available grid connection point, recognising that the viability of a renewable energy led project reduces the further away it is. The Elstree Substation, located adjacent to the Site, has capacity which the Applicant has secured via a

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Connection Agreement. The Applicant considered different sites in the area before concluding there are no preferable alternative sites which are suitable and available for the Proposed Development.

Alternative designs for the Proposed Development were considered during the scheme evolution process and the outcome of consultation with the public and advisors to the Local Planning Authority have led to numerous changes including:

- A reduced extent of solar panel area to increase set back distances from adjoining residential properties and gardens;
- Over 7.5ha of grassland and wildflower planting;
- 6.7ha of low intervention skylark habitat;
- 2ha of parkland;
- Two Nature Areas;
- 0.7ha of orchard;
- 578 m of permissive path linking to the Hertfordshire Way; and
- 2.4km of green corridor.

An alternative renewable energy source to solar in this location could be wind. However, several large-scale wind turbines would be necessary to generate the same amount of power as the Proposed Development and, given the site context and prevailing planning policy regarding onshore wind, it is concluded that the preferred technology is solar arrays. Different types of solar panel systems were considered and, after site investigation and design optioneering, the system with bifacial panels were selected as the best available technology suited to maximising the energy efficiency of the Site.

3.6 Cumulative Development Impacts

Cumulative assessment relates to the assessment of the effects of more than one development.

Cumulative impacts can also include other developments that are not currently in existence but may be by the time the Proposed Development is implemented.

A review has been undertaken of the HBC's planning register to identify any potential cumulative development sites within 5km of the Site and in consultation with HBC's Planning Department, no planning applications or any other consented developments that would appear to warrant a cumulative impact assessment at this time have been identified

It is concluded in the ES that there would be no significant cumulative effects.

4 Energy and Planning Policy

4.1 Energy Policy

National energy policy makes clear that renewable energy is vital to our economic success and social well-being, and that it is important to ensure that the UK:

- moves to a low carbon economy and reduces greenhouse gas emissions to address the predominant challenge of our time, climate change;
- supports an increased supply from renewables;
- continues to have secure, diverse and resilient supplies of electricity as the UK transitions to low carbon energy sources and to replace closing electricity generating capacity;
- increases electricity production to stay ahead of growing demand at all times whilst seeking to reduce demand wherever possible; and
- delivers new low carbon and renewable energy infrastructure as soon as possible - the need is urgent.

The urgency of the need for additional renewable energy is reflected in the declaration at a UK level and also within HBC of a Climate Emergency in 2019 and publishing interim planning policy guidance on how planning decisions should be taken in light of the climate emergency in October 2020, and the setting by Government of a legally binding target to reduce greenhouse gas emissions to net zero by 2050.

4.2 Planning Policy

National planning policy sets out an overarching presumption in favour of sustainable development which means meeting the needs of the present without compromising the ability of future generations to meet their own needs.

National planning policy does not require applicants to demonstrate an overall need for renewable energy, and it recognizes that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions. Policy confirms that solar power is a renewable source of energy and consistent with the principle of sustainable development. It also states that applications for renewable energy should be approved if their impacts are (or can be made) acceptable. Such impacts relate to effects such as landscape and visual impacts, cultural heritage, flood risk, noise, biodiversity, effects on agricultural land etc. Policies regarding the protection and enhancement of these issues are also set out in local planning policy.

The Development Plan for the purposes of determining the Application therefore comprises the following documents;

- Local Plan Core Strategy Development Plan Document 2013; and
- Site Allocation and Development Management Plan 2016.

The Core Strategy sets out HBC's vision and strategy for the Borough for the next 15 years. The Site Allocations and Development Management Policies Plan sets out detailed proposals and policies by which the Council sees the aims and objectives of the Core Strategy being best achieved.

HBC is currently preparing a New Local Plan, planning for the future development in the Borough. The New Local Plan is anticipated to be adopted in late 2021.

HBC published the Hertsmere Local Plan Issues and Options in 2017 for public consultation. The consultation period closed in November 2017. The Vision Statement within the Issues and Options

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document highlighted that HBC plans for greater renewable energy generation of different types, including solar development.

The Local Development Plan (LDP) has sustainable development as a key thread throughout its policies. The Council sets out in the Strategy how the Borough will promote sustainable development including decentralised and renewable or low carbon sources without unacceptable impacts on the characteristics and features of the natural and built environment, green belt, heritage, biodiversity, flood risk or the historic environment.

The LDP recognises the need to protect the Green Belt and sets out a general presumption against inappropriate development within the Green Belt unless very special circumstances exist. National Planning Policy recognises that such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.

The ES addresses the likelihood of aviation safety risk to Elstree Aerodrome operations arising from the proposed development which is also safeguarded in the LDP, whereby the Council will only permit development proposals which will not compromise the Aerodrome's operational integrity and general safety and are compatible with the continued use of the site as an aerodrome.

5 Assessment of Aviation Safety Effects

Chapter 6 of the ES assesses the likely significant effects of the Proposed Solar Development with respect to glint and glare. Specifically, this chapter has considered the effects upon aviation receptors associated with Elstree Aerodrome operations.

The chapter provides;

- Reference to the relevant independent studies regarding glint and glare issues from solar panels;
- An overview of the methodology of the assessment is provided including how effects are assessed and quantified;
- A review of the baseline and assessment of effects;
- Details of mitigation required to make impacts acceptable that has been identified within the Glint and Glare Report; and
- Impacts are then outlined in a table summary.

5.1 Baseline

The assessed 1km area from the Site is a mix between residential (further from Site) and rural (closer to Site). The Elstree Aerodrome, which has one runway (orientation 08/26) and the approach pathways for pilots landing under visual approach conditions and the air traffic control tower are identified as the key receptors for aviation safety considerations.

Within the baseline characteristics of the Site, the two reservoirs to the south of the Site represent potentially significant reflective surfaces.

Clearly, the main local source of irradiance that could cause reflection and glint and glare effects is the sun itself, which is deemed to be a more significant source of irradiance than reflections from solar panels. This is particularly relevant to pilots when approaching the runway (from either east or west) when the sun can be in direct alignment with the runway. The Operations Manager at the aerodrome confirmed that under the baseline, pilots approaching the aerodrome are expected to experience reflection at different times during the day and operational protocols are in place for such incidences.

5.2 Assessment of Effects

The layout of the Site and configuration of the panels has been optimised to reduce the significance of effect of Glint and Glare effects to acceptable levels.

- Air Traffic Control Tower: “negligible” magnitude impact (no impact) is expected upon personnel operating in the tower. Therefore, the overall effect significance for the tower is categorised as “Negligible Adverse”, for which mitigation is not required (see section 8.1 of Document Ref: R007).
- Approach Paths: “low” magnitude impact is expected upon pilots approaching Elstree Aerodrome. Therefore, the overall effect significance for pilots approaching the aerodrome is categorised as “Minor Adverse” for which mitigation is not required (see Section 8.2 and 8.3 of Document Ref: R007).

5.3 Mitigation

Length and intensity of solar reflections are expected to be less significant during construction phase compared to the operational phase once the Proposed Solar Development is completed. However, issues related to glint and glare can still exist during the construction of the Proposed Development. Due to the embedded mitigation within the design of the solar farm aviation receptors are expected to experience “Negligible Adverse” impact.

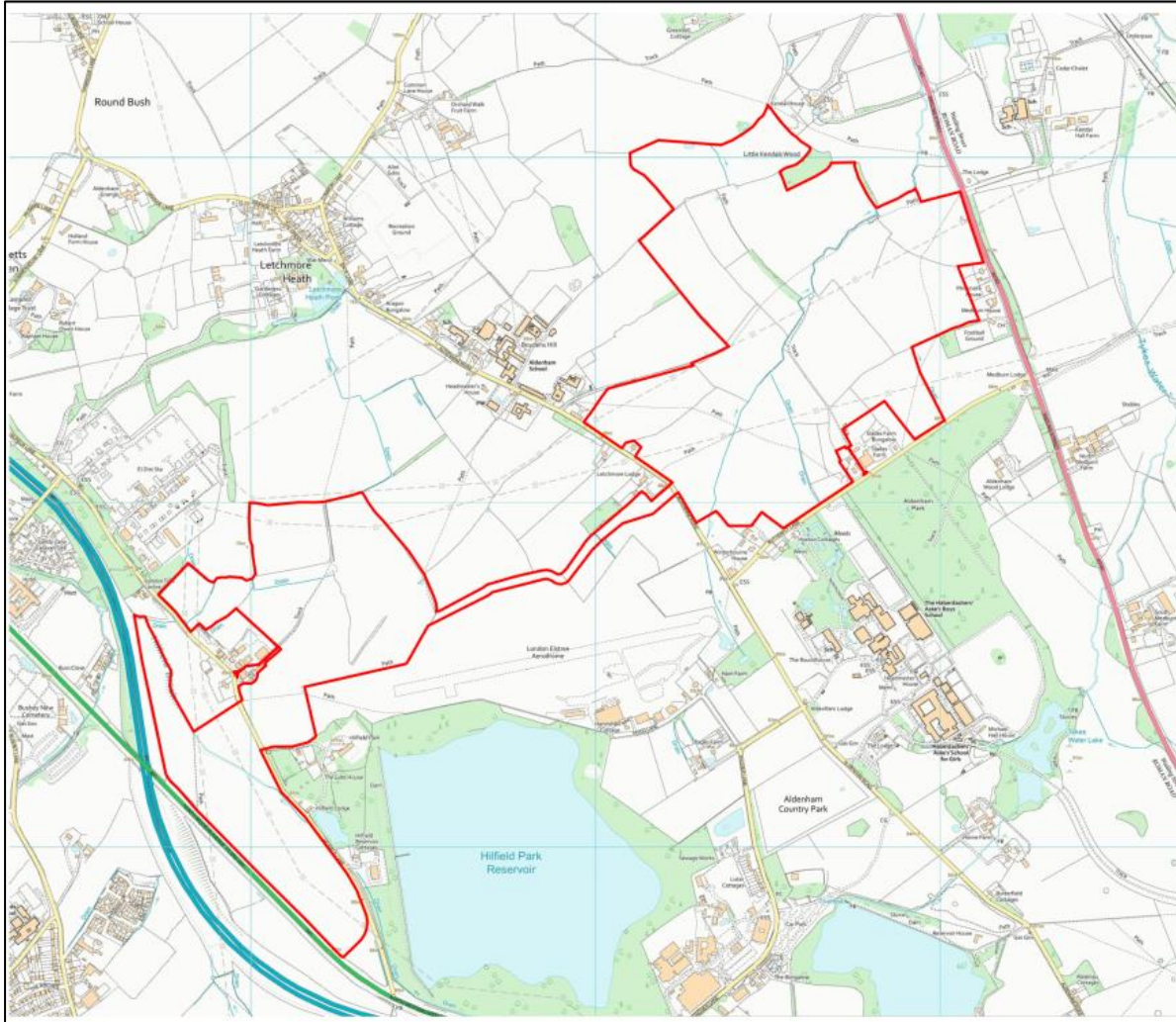
Once the solar farm is operational, no mitigation is necessary for the aviation receptors which are expected to experience “Negligible Adverse” impact.

5.4 Residual Effects

There will be no significant residual effects due to embedded design and proposed mitigation

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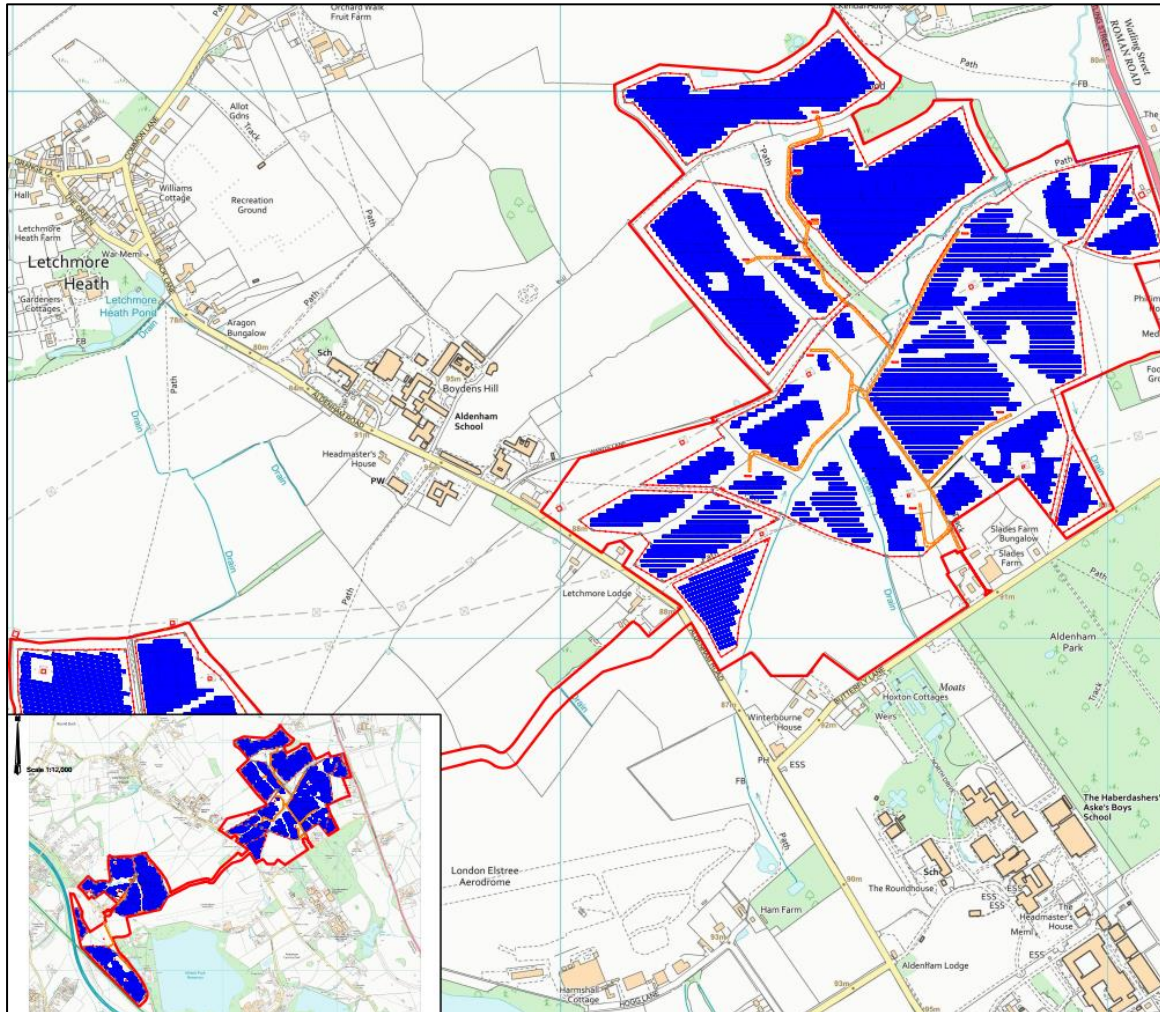
Appendix 1 Site Location Plan



Location Plan (see Document Reference: R002 for scale drawing)

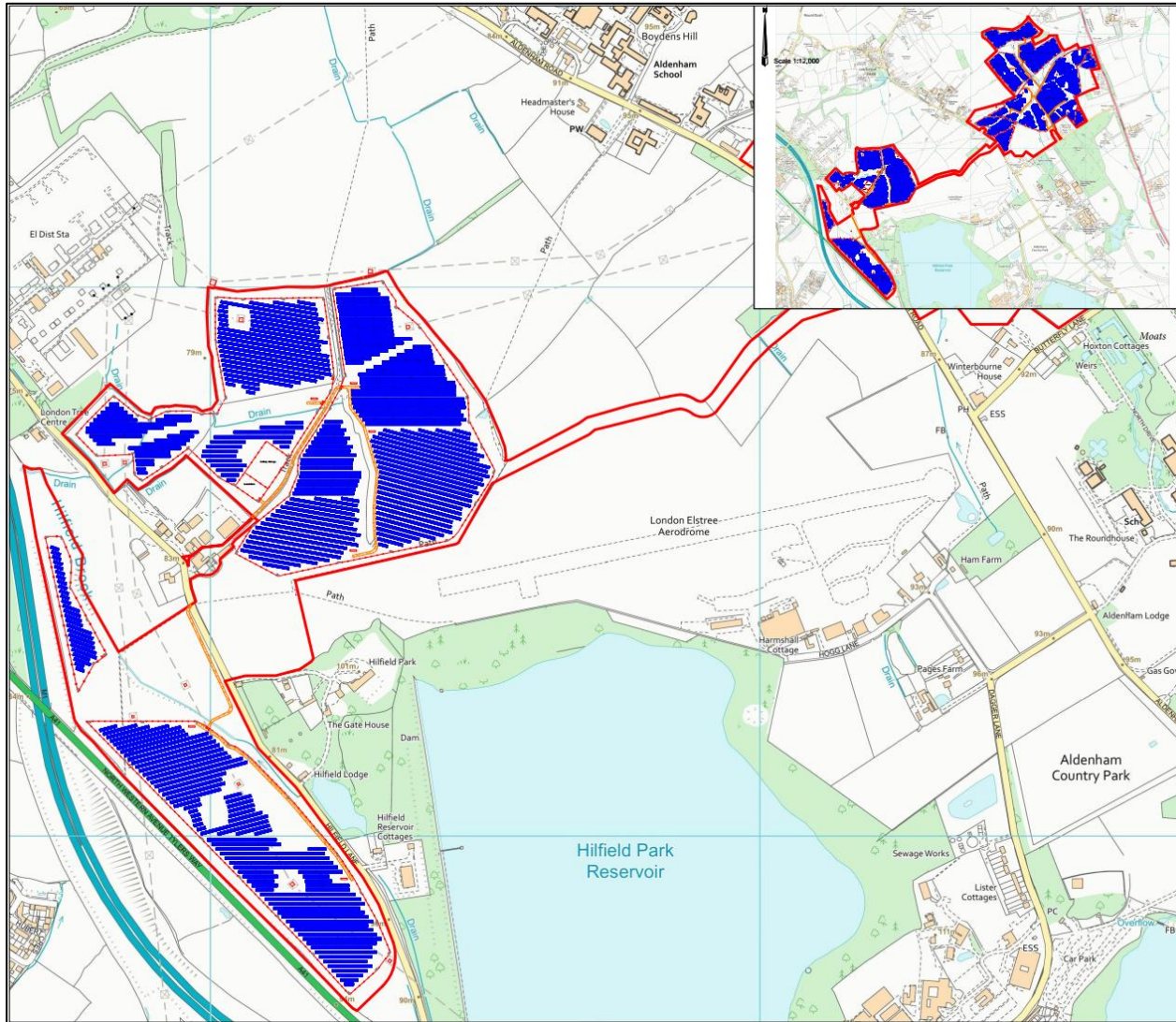
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Appendix 2 Proposed Site Layout Plan



Application Layout – Eastern Parcel (see Document Reference: R002 for scale drawing)

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Application Layout – Western Parcel (see Document Reference: R002 for scale drawing)