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ASTON FLAMVILLE SOLAR FARM

CONSTRUCTION METHOD



Powering the world towards a sustainable future

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1 Introduction

This document outlines the construction methods for the key components of the consented Aston Flamville Solar Farm, prepared to support the discharge of 22/00739/FUL Condition 6 (Hinckley & Bosworth Borough Council) and 22/0048/FUL Condition 6 (Blaby District Council).

This document explains the indicative construction approach for the following elements:

- Mounting structures
- Solar modules
- MVPS (Medium Voltage Power Stations)
- DNO and Customer Substations
- Fencing
- Internal access tracks
- CCTV cameras

The information provided reflects the approved layout and is intended to give a clear overview of how each element will be constructed on site. These methods align with standard industry practice and ensure that works will be undertaken safely, efficiently, and with minimal environmental impact. The general location of the development site is shown in Figure 1 for reference.

This document forms part of the wider suite of information submitted to support the discharge of Condition 6 prior to commencement of development.

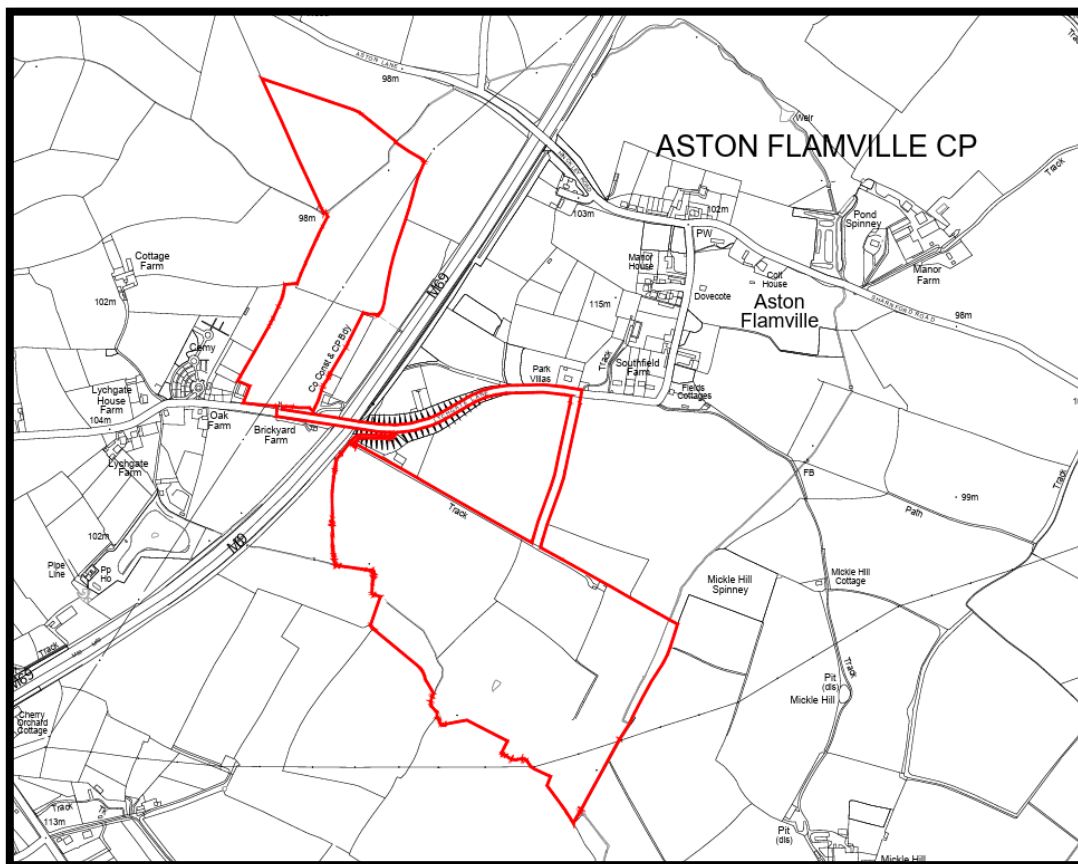


Figure 1: Site Content Plan (Site Location Outlined in Red)

2 Construction Method

This section outlines the construction methods for the principal components of the solar farm, describing how each element will be installed on site in accordance with standard industry practices and the approved design.

2.1 Mounting Structures

The mounting structures for the solar arrays will be installed using standard industry practices designed to minimise ground disturbance and protect the existing land condition. The works will follow the sequence below:

1. **Setting Out:** The mounting rows will be set out using GPS survey equipment to match the approved layout and the dimensions shown in the engineering drawings (e.g., row spacing, pile centres and module layout).
2. **Pile Installation and Verification:** Galvanised steel piles (typically 1.5–2.5 m long depending on interior/exterior zone requirements) will be driven into the ground using a tracked piling rig, with no concrete foundations required under normal conditions. Installed piles will be checked for verticality, embedment depth and correct spacing as indicated in the structural layout diagrams.
3. **Frame Assembly:** The main rails, sub-rails, struts, braces and connectors manufactured from cold-formed galvanised steel as specified in the design will be fixed to the piles using bolted connections. Earthing connections will be attached to designated points on the steel structure.
4. **Environmental Management:** Ground disturbance will be limited to pile positions, with machinery restricted to designated access routes to minimise impacts on soil and vegetation.

2.2 Solar Modules

The installation of the solar modules will follow standard utility-scale construction practices, ensuring safe handling of the dual-glass modules and consistent installation across the mounting structures.

1. **Handling and Positioning:** Modules will be delivered on pallets and stored in a designated laydown area, then transported to each row using light plant along the internal access routes.
2. **Installation on Mounting Structures:** Each dual-glass, framed module will be manually lifted into place on the mounting rails and secured using manufacturer-approved mid-clamps and end-clamps suitable for the 30 mm frame shown in the mechanical data.
3. **Electrical Connection:** Modules will be connected in strings using the factory-fitted MC4-type connectors and 4.0 mm² DC cables, following the inverter design and polarity arrangement.
4. **Quality Checks:** Each completed row will undergo visual inspection, clamp-torque checks and string-level electrical verification prior to commissioning.

2.3 MVPS (Medium Voltage Power Station)

The MVPS units will be installed on reinforced concrete foundations designed to provide stable support, safe cable access and compliant operational clearances, and serve as the point where the low-voltage output from the solar arrays is collected and transformed to medium voltage for connection into the onsite electrical network.

1. **Foundation Preparation:** The foundations will be constructed to the required footprint and depth, providing a level base and incorporating openings for HV/LV cable entry, the oil-tray area and the required pressure-relief space beneath the medium-voltage compartment.

2. **Positioning and Installation:** Each MVPS unit will be lifted into position using approved lifting points and aligned so that all cable entry points and access requirements correspond with the completed foundations.
3. **Cable Routing and Connection:** HV and LV cables will be routed through the designated entry zones beneath the unit, with adequate clearance for personnel to clamp, secure and terminate cables safely.
4. **Operating Platform and Access:** Where door thresholds sit above ground level, an operating platform will be installed to provide safe access for switching and maintenance activities.
5. **Backfilling and Finishing:** After cables are installed, the surrounding trenches will be backfilled carefully, ensuring all cable access areas remain unobstructed and maintaining a clear zone beneath the medium-voltage compartment for pressure-relief.

2.4 DNO and Customer Substations

The DNO and Customer substations are containerised buildings installed on reinforced concrete foundations designed to provide stable support, safe operational access and compliant clearances for all high-voltage equipment.

1. **Foundation and Civil Works:** The substation area will first be cleared, stripped of topsoil and excavated to the required reduced level. A compacted sub-base will be placed, and formwork erected to achieve the correct foundation footprint, plinth height and edge finish. Reinforcement will be installed in accordance with the structural design, with correct bar laps and spacing. Concrete will then be poured, vibrated and finished to produce a smooth, uniform surface suitable for the container interface. The foundations will incorporate cast-in ducts, openings for HV/LV/comm cables, drainage falls (typically 1:100) and chamfered edges. Once cured, the foundation will be checked for level accuracy and dimensional tolerances before the container is delivered.
2. **Delivery and Positioning:** Each prefabricated substation container will be delivered to site and lifted into position using the designated heavy-duty lifting points. The unit will be accurately aligned with the foundation plinth, cable duct entries and door orientations to ensure safe operational access and correct cable-routing paths.
3. **Structural and Building Features:** The containerised buildings include fire-rated insulated walls, corrosion-protected steel fabrications, weather-sealed external finishes and secure outward-opening substation doors. The floor, roof and wall assemblies are fully engineered to meet the required structural, fire, thermal and ingress-protection standards.
4. **Cable Ducting and Penetrations:** HV, LV and communications cables will be pulled through the pre-installed duct entries formed within the plinth. All ducts will be sealed using appropriate fire-stopping or gas-tight sealing systems to prevent water ingress and maintain structural integrity.
5. **Internal Equipment and Services:** Switchgear, control panels and auxiliary equipment supplied within the container will be installed and fixed in accordance with the manufacturer's layout. Internal services include lighting, emergency lighting, power distribution, heating, dehumidification and cable management systems.
6. **Earthing and Bonding:** The substation will be integrated with the site earthing system, with all metallic elements bonded appropriately to comply with electrical safety regulations.
7. **Final Inspection:** The installation will undergo final checks for structural alignment, cable terminations, earthing integrity, safe access, fire-safety provisions and general compliance before being energised.

2.5 Fencing

Perimeter fencing will be installed to provide secure site boundaries while maintaining ecological connectivity through dedicated mammal access points.

1. **Setting Out:** The fencing alignment will be set out along the approved boundary, including locations for gates, hedge crossings and mammal access features.
2. **Post Installation:** Timber fence posts will be installed at regular centres along the boundary, either driven into the ground or set in localised concrete footings where additional stability is needed.
3. **Mesh and Tension Wire Installation:** Wire mesh will be fixed to the posts, supported by tension wires, tension springs and strainers to maintain consistent tension and fence height.
4. **Mammal Passages:** Openings at the base of the mesh will be formed at appropriate intervals to allow badger, fox and small mammal movement across the boundary.
5. **Gates and Access Points:** Vehicle and pedestrian gates will be installed on the pre-set gate posts, ensuring alignment with internal access tracks and maintaining security and operational access.

2.6 Internal Access Tracks

Internal access tracks will provide safe and durable routes for construction, maintenance and operational vehicles within the solar farm.

1. **Excavation and Formation Preparation:** The track corridor will be excavated to a reduced level (typically 250–350 mm), inert spoil removed, and the formation trimmed, compacted and tested (CBR) to confirm it meets the design requirements.
2. **Geotextile and Ground Reinforcement:** A 200 g/m² non-woven geotextile will be laid on the prepared formation, and geogrid reinforcement installed where required to improve ground stability.
3. **Sub-base and Surface Construction:** Crushed limestone sub-base will be placed and compacted in layers (250–350 mm), followed by a 100–130 mm compacted Type 1 limestone surface to achieve the specified bearing capacity, verified by plate bearing tests.
4. **Finishing Works:** The edges of the track will be reinstated with topsoil and graded back into the surrounding ground to ensure a smooth transition and appropriate surface-water drainage.

2.7 CCTV Cameras

CCTV cameras will be installed to enhance site security and monitor access points within the solar farm.

1. **Pole Installation:** CCTV poles will be installed at designated locations, either driven directly into the ground or set in small concrete foundations depending on soil conditions and equipment load.
2. **Camera Mounting:** Cameras and associated fixtures will be mounted on the poles and adjusted to the required viewing angles.
3. **Cable Routing:** Power and communication cables will be routed via underground ducting or along designated cable routes to the nearest MVPS or control point.
4. **Connection and Commissioning:** Cameras will be connected to the security system, configured for correct operation and tested to ensure full coverage of the required areas.

3 Construction Management and Site Practices

3.1 Working Hours

All construction activities for the access track enabling works will be undertaken during standard daytime hours to minimise disturbance to nearby residents and ensure safe working conditions.

The proposed working hours are as follows:

- 08:00 to 18:00 – Monday to Friday
- 08:00 to 13:00 – Saturday
- No works on Sundays or Bank Holidays

3.2 Health, Safety and Environmental Controls

All works will follow the Construction (Design and Management) Regulations 2015 (CDM 2015) and relevant health, safety, and environmental standards. The focus will be on safe working practices, environmental protection, and avoiding any impact on Network Rail operations.

No works will take place in proximity to live services or within existing drainage features. All vehicle speeds on the temporary access track will be restricted to 10 mph to minimise surface damage and dust generation.

3.3 Environmental and Community Considerations

The enabling works will be carried out with consideration for the surrounding environment and local community to minimise disturbance and ensure good site management.