Gate Burton
ENERGY PARK

Gate Burton Energy Park Environmental Statement

Outline Soil Management Plan
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Gate Burton Energy Park Limited

Outline Soil Management Plan

JSM Group			
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Location:	Gate Burton, Gainsborough		
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This document has been updated following comments made during ISH 3.

Introduction

This report provides recommendations on soil management for the Gate Burton Solar and Energy Storage Park and installation of the 400 kV cable from the Solar and Energy Storage Park to the point of connection at National Grid sub-station.

Prior to construction, a Soil Management Plan (SMP) will be produced as part of the development of the Construction Environmental Management Plan (CEMP). The SMP will be based on this Outline SMP.

Soil types

Soils within the Order limits were found to be mainly heavy types with drainage restrictions formed in mudstone. Smaller areas of lighter permeable soils were identified in the north-west of the site where land is formed in sand and gravel deposits. A full soil description is provided within ES Chapter 12 Socio-Economics and Land Use **[EN010131/APP/3.1]** and in the Agricultural Land Classification Report Appendix 12-C **[EN010131/APP/3.3**].

Construction

Specific soil management practices:

a) Trial hole and bore hole testing has been completed.
b) Ground testing / soil sampling will be required, to confirm contamination levels.
c) Regular Waste Acceptance Criteria (WAC) testing will be undertaken to confirm presence of contaminants.
d) Granular haul roads to be applied where feasible to avoid tracking heavy machinery through agricultural land, track matting will be applied where this is not feasible and monitored during regular environmental audits.
e) During high rainfall seasons work will be planned and managed to minimise impact on soils
f) Feasibility to be determined of wider tracked vehicles to distribute the weight more evenly and minimise impact.
g) Access onto undisturbed soils will be avoided, as far as possible, via use of a haul road where feasible
h) Confine traffic movements to designated routes wherever possible
i) Where vehicles come off the running track, track matting will be used if the ground conditions are suitable
j) Sensitive areas will be fenced off with no access
k) Guidance from Defra, Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. September 2009 to be applied at all times; Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (publishing.service.gov.uk)
l) Soil to be protected from construction activities (e.g. retained trees, protected habitats, archaeology, invasive weeds) should be demarcated.
m) Stockpile heights of 3 to 4 m (maximum) for topsoil
n) Storage periods will be dependant upon the soil moisture and consistency. Once measured a timeframe will be determined.
o) Soil stockpiling will be positioned in a site area where it will remain undisturbed and will not interfere with site operations.
p) Stockpiles should not be positioned within the root or crown spread of trees, or adjacent to ditches, watercourses or existing or future excavations.
q) Stockpile slope angles will need to be less than 40˚ to ensure stability
r) Wind-blown dust, generated from dry, exposed ground or soil and wastes stockpiles, will be prevented generally with the use of water suppression. Surfaces and stockpiles will be damped down to minimise dust as necessary.

s) In wetter conditions, deposits of mud on roads, pavements and areas of hard-standing may need to be cleared. Installation of wheel washing devices may be required, preferably with water recycling equipment. Small occurrences will be cleared manually with a broom and shovel; elsewhere road sweepers will be called upon. The need to control mud and dust is covered in relevant task risk assessments, method statements.

t) Storage of soils, for water quality purposes:
To protect waterbodies from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20 m from any water body on flat lying land (and further if the ground is sloping, subject to on site risk assessment and observational monitoring) and not within the fluvial floodplain. Where this is not possible, and it is to be stockpiled for longer than a two-week period, the material will either be covered with geotextile mats, seeded to promote vegetation growth. In all situations, runoff from the stockpile will be prevented from draining to a watercourse without prior treatment. If located where there is a risk of tidal flooding or within fluvial Flood Zone 2, additional measures will be provided to reduce the risk of erosion (e.g. by protecting the base using spaced out concrete blocks, pegged in geotextile sheets, etc.).

u) All excavated material not re-used on the site of the works must be removed from the floodplain. Environment Agency have insisted on floodplain compensation even for temporary storage of soils on the floodplain on other schemes.

v) Ground Investigation survey locations avoid the flood plain, works must ensure no soil is placed there.

w) Measures included within Method Statements and Environmental Management Plan to be followed at all times and will be briefed to the site team during the induction process.

x) A map of Topsoil units will be included within the detailed SMP and retained to ensure topsoil units are restored to their original location. The stockpiled soils must be labelled and protected from trafficking and damage. Any soil stockpiles in place for more than 6 months will be seeded.

y) After decommissioning, agricultural land will be restored to its former ALC grade (unless the ALC grade has improved). Good practice measures will be implemented to assure restoration of the land to the baseline ALC grade, minimising the potential loss of soil functions.

z) Handling and storage of the identified soil materials will be in accordance with measures from the Code of Practice for the Sustainable Use of Soils on Construction Sites and the British Society of Soil Science Guidance Note 'Benefitting from Soil Management in Development and Construction' in order to protect soil functions during site working.

aa) The results of the soil resource survey contained within the Appendix 12C: Agricultural Land Classification Report [EN010131/APP/3.3] will be presented in a detailed Soil Management Plan that includes maps showing the location and extent of soil contrasting in any of the following parameters – texture, stoniness, organic matter content, compaction or permeability. The report will: include a description of the characteristics of each soil resource; discuss the suitability of the different soil materials for reuse; and, make recommendations for the handling and storage of the identified soil materials in order to protect soil functions during site working. The results of the pre-construction soil resource survey within the grid connection corridor will be shared with Natural England in advance of preparing the detailed Soil Management Plan.

bb) A detailed audit trail will be kept of all soil materials required for land being eventually reinstated and soil being retained for reuse in the restoration process must be stored separately from those identified for reuse elsewhere or removal off site.

cc) The use of sustainable drainage systems on site is included within the drainage strategy for the Scheme as these can provide more long term protection of soils beyond the construction phase, by facilitating the infiltration and attenuation of surface water. Features such as permeable surfaces reduce soil sealing and help to increase water infiltration and can increase groundwater recharge, while swales and retention basins can temporarily collect surface water and reduce soil erosion from surface water runoff.

dd) Restoration will be informed by Appendix 12C: Agricultural Land Classification Report [EN010131/APP/3.3] to ensure the soil condition within the cable route is restored to its current ALC grade after construction.

ee) Tall vegetation / crops will be cleared prior to topsoil stripping.

ff) Areas of the site which are not to be stripped or used for stockpiling, haul routes or compounds will be clearly marked by signs and barrier tape and protected from trafficking and construction.

gg) Soil management of the land under any proposed areas for Biodiversity Net Gain, and aftercare will be in accordance with this OSMP. Although there is no soil movement proposed in these areas, soil trafficking may occur and therefore mitigation measures need to be in place to minimise the potential impact on the soil resource.

hh) All areas proposed to benefit from Biodiversity Net Gain (70.95% for area-based habitats, 37.24% for hedgerows and a net gain of 14.22% for rivers) will also be subject to the soil management conditions within this report.

ii) Whilst the method proposed for the installation of the solar PV arrays does not involve any digging or soil mixing, there is the risk of soil damage due to trafficking, especially when the soils are wet. The physical loosening of compacted soils may only provide temporary alleviation, while actively damaging the soil's biological capability to recover and maintain its structure in the long-term, with frequent cultivation often a factor associated with poorly structured soils. Therefore, compaction will be avoided as far as possible in the first instance. Any decompaction or remediation activities will be done when the soils are in a suitably dry condition.

jj) The impact of construction activities on the soil resource will be minimised by ensuring that the grass sward is fully established (i.e., no bare ground), prior to the installation of the panels and associated infrastructure.

Soil Handling

a) Soil handling to be kept to a minimum
b) Likely use of Plant 13T excavators, trucks
c) Excavated soil to be stored in close proximity and same field as dig location, to avoid cross-contamination between fields
d) For biosecurity, a wheel wash and boot wash will be required at access and egress of sites to highways.
e) Stockpiles to be stored separately to subsoils. During excavation each stockpile type will be placed on opposing sides of the trench

Soil Restoration

a) On completion of the works backfilling shall be done as per the specification with the utmost of care and shall be done in compacted layers.
b) Conventional excavation will proceed in accordance with the provisions as stated in the HAUC Code of Practice Specification
c) In the event that soils become compacted, improvement will be made via soil bursting. All soils will be returned to landowner in like for like condition (as per pre-construction condition survey).

Topsoil strip

a) Topsoil strip to be conducted to approximately 300mm depth or at change of ground conditions / strata
b) Prior to excavation the bucket will be cleaned of any previous subsoil, as a biosecurity measure.
c) Topsoil will be transported within clean plant body

Use of stripped soil (max time stored; backfilling)

a) Trench excavations are anticipated to be backfilled on the day of the works, where possible. If any excavations are left overnight, they must be covered to prevent mammals and other animals falling in and being harmed, with a means of escape provided.

Prior to commencement of works, a Soil Management Plan (SMP) will be prepared in accordance with this Outline Soil Management Plan (Outline SMP). The SMP will detail the management of soil on areas such as temporary working compounds, temporary and permanent tracks and sites of temporary and permanent buildings. The SMP will include details of topsoil and subsoil stripping depths, how and where soils will be stored, conditions under which soil stripping and reinstatement will be carried out and how the reinstatement will be carried out.

The Outline SMP and SMP will follow the principles of best practice including the Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. and The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings.

Earthworks:

a) Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
b) Use Hessian, mulches or tackifiers where it is not practicable to re-vegetate or cover with topsoil, as soon as practicable
c) Only remove the cover in small areas during work and not all at once.

Surface water management during construction:

a) All reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from construction activities;
b) A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. This will include identifying all land drains and waterbodies in the Order limits and where necessary, ensuring that they are adequately protected using drain covers, sand bags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment (e.g. lamella clarifiers);
c) Site drainage, including surface runoff and dewatering effluents, will be discharged to sewers where practicable and relevant permissions will be obtained from the sewerage or statutory undertaker. Discharge to watercourses will only be permitted where discharge consent or other relevant approval has been obtained (where necessary);
d) Scheme drainage during construction will receive appropriate pollution control measures as agreed with the sewerage undertaker or the Environment Agency as appropriate. Holding or settling tanks, separators and other measures may be required, will be provided and maintained;
e) The relevant sections of BS 6031: Code of Practice for Earthworks will be followed for the general control of site drainage;
f) Mud deposits will be controlled at entry and exit points to the Site using wheel washing facilities and/or road sweepers operating during earthworks activities or other times as required;
g) Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing.

Accidental spillage within the Order limits:

a) Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001.
b) Fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers);
c) Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place off site if practicable or only at designated areas within the Scheme compound. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted on the Order limits. Drip trays will be placed below static mechanical plant;
d) All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses;
e) All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling;

f) As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses;
g) Construction waste/debris are to be prevented from entering any surface water drainage or water body;
h) Surface water drains on public roads trafficked by plant or within the construction compound will be identified and, where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sand bags) or the road regularly cleaned by road sweeper;

Management of flood risk:

a) Topsoil and other construction materials will be stored outside of the 1 in 100 year floodplain extent where feasible. If areas located within Flood Zone 2/3 are to be utilised for the storage of construction materials, this would be done in accordance with the applicable flood risk activity regulations, if required;
b) Connectivity will be maintained between the floodplain and the adjacent watercourses, with no changes in ground levels within the floodplain as far as practicable;
c) The contractor will monitor weather forecasts on a monthly, weekly, and daily basis, and plan works accordingly. For example, works in the channel of any watercourse will be avoided or halted were there to be a significant risk of high flows or flooding; and
d) The construction laydown area site office and supervisor will be notified of any potential flood occurring by use of the Floodline Warnings Direct or equivalent service.

Security of sites:

a) Security will be in place at all sites with an office compound, with patrols where plant would be stored overnight if left on-site.
b) Security fencing will surround open excavations and will potentially guard machinery, if left in situ around excavations. These measures will help prevent any vandalism that could lead to a pollution incident.

Decommissioning

a) On completion of the works backfilling shall be done as per the specification with the utmost of care and shall be done in compacted layers.
b) On completion of all works the site shall be left in a clean and tidy condition.
c) On completion of works and only following reinstatement, all barriers, plant and materials will be removed and cleared from site
d) Cable inspection and final environmental audit upon site completion to be carried out.