

## **Great North Road Solar and Biodiversity Park**

Environmental Statement

Volume 4 – Technical Appendices

Technical Appendix A9.3 – Outline Drainage Strategy

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## **A9.3.1 INTRODUCTION**

### **A9.3.1.1 BACKGROUND**

- 1 This Technical Appendix (TA) presents the assessment of surface water run-off management in the form of an Outline Drainage Strategy. This Outline Drainage Strategy has been prepared as part of an Environmental Statement for a solar PV (the Development) located on land to the northwest of Newark, in the Newark and Sherwood district, Nottinghamshire, East Midlands, which comprise the Order Limits.
- 2 The Order Limits form the Core Study Area (CSA) for this assessment.
- 3 The areas within the CSA are described in ES Chapter 5, Development Description, [EN010162/APP/6.2.5] as being one of the following areas:
  - Work Area 1: Solar PV;
  - Work Area 2: Cables;
  - Work Area 3: Mitigation/enhancement;
  - Work Area 4: Intermediate substations;
  - Work Area 5a: BESS;
  - Work Area 5b: 400 kV Substation;
  - Work Area 6: National Grid Staythorpe Substation and connection point;
  - Work Area 7: Consented Staythorpe BESS and Connection; and
  - Work Area 8: Access Works.
- 4 The layout of the above areas, including field numbers, is shown on ES Figure 5.1 [EN010162/APP/6.3.5.1].
- 5 The Order Limits are located wholly within the administrative area of Newark and Sherwood District Council (NSDC).
- 6 This TA proposes drainage principles which are secured through a requirement in the draft DCO [EN010162/APP/3.1].

## **A9.3.2 SOLAR PV SURFACE WATER MANAGEMENT**

### **A9.3.2.1 CONSTRUCTION PHASE**

#### **A9.3.2.1.1 Pollution Prevention**

- 7 Given the relatively short construction phase and gently sloping land within the OL, it is not anticipated that significant amounts of sediment will be generated. The Development will adhere to a Construction Environmental Management Plan (CEMP), to be secured by DCO Requirement and based on the Outline CEMP provided in ES TA A5.3 [EN010162/APP/6.4.5.3]), which will ensure compliance with the relevant guidance.

#### **A9.3.2.1.2 Run-off Rates**

- 8 Rural Sustainable Drainage Systems (RSuDS) are not a new concept, but they are not widespread in the rural environment and can present many opportunities for improving the management of water at source. They are a collection of physical structures used to mimic natural processes. In rural

environments, it is an approach for managing the detrimental impact of rainfall on fields where run-off is a major threat to the flora, fauna and chemical status of our surface waters.

- 9 RSuDS slow down or prevent the transport of pollutants to watercourses by breaking the delivery pathway between the pollutant source and the receptor. By intercepting run-off and trapping sediment before it leaves the field they help maintain and manage the provision of good water quality by preventing the loss of soil, chemicals, nutrients, and faecal organisms. A further benefit is their ability to temporarily capture water and slow down flow. This can reduce localised flooding and provide valuable aquatic habitats in the form of micro-wetlands for farmland wildlife and will encourage the downward movement of water to recharge aquifers.
- 10 Research in the United States by Cook & McCuen (2013) meta-analysis outlines that solar panels do not have a significant effect on runoff volumes or peak flows, however where ground beneath panels is bare there may be an increase in peak discharge.
- 11 Milazzo et al. (2023)<sup>37</sup> reviews the role of grassland for erosion and flood mitigation in Europe and provides quantification that permanent grassland mitigates better runoff than arable land.
- 12 Whilst the Natural England Technical Information Note 101 (TIN101) “*Solar Parks: maximising environmental benefits*” has been archived, the principles relating to solar parks, their siting, their potential impacts and mitigation requirements for the safeguarding of the natural environment are still relevant.
- 13 TIN101 states:
- 14 “*The key to avoiding increased run-off and soil into watercourses is to maintain soil permeability and vegetative cover. Permeable land surfaces underneath and between panels should be able to absorb rainfall as long as they are not compacted and there is some vegetation to bind the soil surface*”.
- 15 As such, a suitable grassland sward will be developed in areas underneath the PV arrays before the construction phase.

#### A9.3.2.1.3 PV Array Installation

- 16 Whilst the PV arrays and racking system does not involve the installation of hardstanding, the installation methods could lead to soil compaction if not managed properly.
- 17 Installation of the racking system (mounting frame) should only occur when soil conditions are suitable, e.g., dry enough that tyre imprints are not deeper than a specified depth when tracking across land. The Construction Contractor will be responsible for monitoring conditions, in consultation with the Ecological Clerk of Works, in accordance with a Soil Management Plan (an outline SMP is provided as TA A17.2 EN010162/APP/6.4.17.2).
- 18 The mounting framework is likely to be delivered by a vehicle with a trailer and is unlikely to cause soil compaction.

- 19 The racking system will then be pile driven into the ground to a depth of typically 1 to 2 m, depending on ground conditions using similar tracked mini pile driver machinery, as shown in Plate A9.3.1.

**Plate A9.3.1: Mini pile driver examples**



- 20 The PV modules are likely to be secured to the racking system by hand and therefore soil compaction is unlikely to occur during this stage, as shown in Plate A9.3.2.

**Plate A9.3.2: PV module installation<sup>38</sup>**



- 21 Should vehicles cause compaction during the installation of the PV arrays then this will be ameliorated using typical small-scale horticultural machinery, as outlined in Section 5 of the oSMP (TA A17.2 EN010162/APP/6.4.17.2)

#### A9.3.2.2 OPERATIONAL PHASE

- 22 RSuDS components from the construction phase (grassland) will remain in place for the operational phase of the Development.

- 23 The raised nature of PV Arrays will not prevent soil from absorbing rainwater as the panels will not be placed directly on the ground and each PV Row will be separated, with the same area of soil / grassland available for infiltration as per the baseline scenario.
- 24 Once rainfall has fallen off a PV Array, the water will be able to spread and flow along the ground under the PV Arrays evenly into the rain-shadow of the row below, so as to mobilise the same percentage of the ground for infiltration as was available prior to the installation of PV Arrays.
- 25 The PV Array will comprise rows of solar panel modules mounted on metal frames and pile driven into the ground to limit the footprint of PV array units.
- 26 The panels would be mounted at approximately 0.5 m from the ground at the lowest point, depending on modelled flood depths, there will be a requirement to raise the leading edge of the PV arrays in some areas.
- 27 Installation of the PV arrays does not involve the introduction of hardstanding at ground level meaning the superficial cover for the majority of the Site will remain the same as the baseline.
- 28 As the baseline vegetation is arable crops the establishment of grassland will be beneficial in terms of vegetation cover and soil stabilisation, as the land will not be tilled.
- 29 Additionally, the PV array tables will have regular rainwater gaps to prevent water being concentrated along a single drip line. As such, rainfall landing on the solar panels will drain through rainwater gaps and infiltrate into the ground beneath and between each row of panels, as shown in Plate A9.3.3.

**Plate A9.3.3: Rainwater gaps on PV array table**





- 30 Control of run-off from the PV Arrays will be implemented through the land management techniques based upon RSuDS methods that will be implemented before the construction phase, in accordance with the EA's guidance<sup>39</sup>, shown in Plate A9.3.4.
- 31 The limited installation of impermeable surfaces will prevent a significant increase in surface water run-off.

**Plate A9.3.4: Established grassland and vegetation cover at Solar Farm**



- 32 The exact grass seed mix will be determined, as outlined in the Outline LEMP (TA A5.1 [EN010162/APP/6.4.5.1]).
- 33 The grassland will be managed through an initial and long-term management plan and should be secured through the LEMP.
- 34 The promotion of managed grassland will prevent surface water from the drip line from compacting the ground and therefore limit the potential for rilling and soil mobilisation.
- 35 As outlined in Section A5.5.4.5 of the oOEMP [EN010162/APP/6.4.5.5], maintenance of solar farm equipment and other regular equipment used onsite, such as any operational vehicles, tools and machinery will be carried out by the relevant operational staff. The maintenance will be carried out based on specific guidance and method statements by appropriately trained staff, in line with the required maintenance schedules. This will minimise the risk of compaction of soils and pollution of watercourses.
- 36 It should also be noted that large woodland strips will be established along with wildflower meadow, which will be largely outside the fence, as shown on the masterplan (Figure 5.2 [EN010162/APP/6.3.5.2]) and Outline LEMP [EN010162/APP/6.4.5.1]. These measures will also help to slow surface water before entering the wider hydrological network.
- 37 As discussed in Section A9.1.1.7 of the FRA [EN010162/APP/6.4.9.1C], several communities surrounding the Development suffer from pluvial flooding as a result existing runoff pathways concentrating flows to urban areas during heavy or prolonged precipitation events.

- 38 Maplebeck has a history of pluvial flooding as run-off cascades from the elevated agricultural land to the west, north and south.
- 39 A 2D direct rainfall model was established to model the baseline flood routes and depths and model the effect of the introduction of grassland under the PV arrays and woodland planting.
- 40 Areas of woodland and grassland were attributed a Manning's N roughness value and added to the model as polygons.
- 41 The OS buildings and roads layers were also stamped into the LIDAR data to ensure flow pathways were accurately represented.
- 42 Mass balance error for all simulations was 0.0 %.
- 43 Figure A9.22 in Appendix D of the FRA [EN010162/APP/6.4.9.1C] shows the location of RSuDS measures within the Development in relation to Maplebeck.
- 44 Figures A9.23 and A9.24 in Appendix D of the FRA [EN010162/APP/6.4.9.1C] show the maximum flood depth for the 1 % AEP for the baseline 1 % AEP and 1 % AEP with wildflower / grass mix under the PV array scenarios.
- 45 Grassland has a marginal benefit in reducing maximum flood depths for the 1 % AEP event compared to the baseline scenario.
- 46 There is an opportunity to provide additional natural flood management (NFM) measures within the CSA which have a positive effect on the downstream environment, without necessarily improving the flooding situation within the CSA and the measures will be brought forward as part of a separate Town and Country planning application.
- 47 The cumulative effect of the Development and the NG+ NFM schemes is assessed in ES Chapter 9: Water Resources [EN010162/APP/6.2.9].

#### A9.3.2.2.1 Steeper Slopes

- 48 It is reported in Schwyter & Vaughan (Soil Science Laboratory Manual)<sup>40</sup> that the amount of soil erosion is directly related to the amount of surface water run-off, which depends on the water infiltration rate and the percentage of the slope. The steeper the slope and the less rapid the water infiltration rate, the more rapid the water run-off rate for a given soil.
- 49 It is noted within the Soil Science Laboratory Manual that most soils will generate rapid or very rapid surface water run-off with slopes between 6 to 12 %, regardless of soil type.
- 50 80 % of Work Area 1: Solar PV is on slopes of less than 6 %.
- 51 Work Area 1: Solar PV is mostly shallow sloping with steeper slopes confined to the banks of drainage ditches and isolated areas, as shown in Figure A9.25 in Appendix D of the FRA [EN010162/APP/6.4.9.1C].
- 52 In areas where PV Arrays run parallel to a slope of 6 % or greater, active measures such as berms, stone filter drains (as shown in Plate A9.3.5) and swales will be incorporated to slow the flow of surface water run-off as part of construction SuDS, which could be retained for the operational phase of the

Development. Filter drains would measure 200 mm width and 300 mm depth in the form of a linear scrape which is backfilled with clean, uncompacted Type 2 or 3 aggregate.

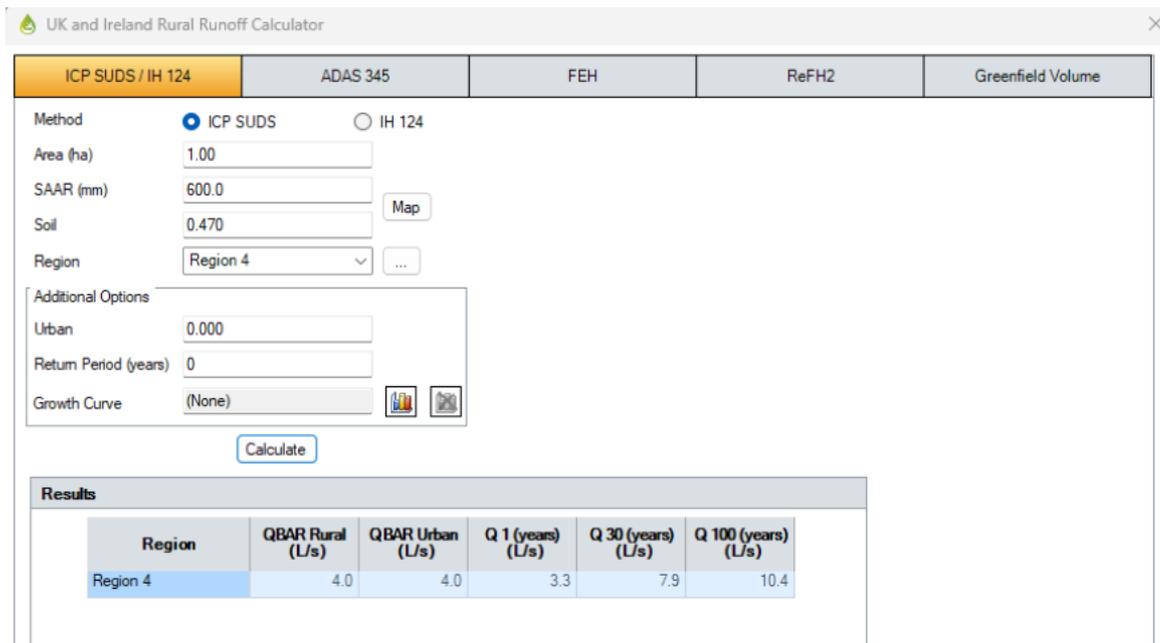
**Plate A9.3.5: Example filter drains at solar farms**



### A9.3.3 WORK AREA 5A: BESS SURFACE WATER MANAGEMENT

- 53 This section outlines how the Development will be designed to meet the requirements of:
- National Planning Practice Guidance (2014) (as amended 2022);
  - The revised NPPF (as amended 2024);
  - The Environment Act (2021);
  - Non-Statutory Technical Standards for Sustainable Drainage Systems (2015);
  - Environment Agency (EA) - Rural Sustainable Drainage Systems (RSuDS)<sup>41</sup>;
  - EA - Pollution Prevention Guidelines (PPG) Controlled Burn: PPG28 (archived but still relevant);
  - CIRIA - Containment systems for the prevention of pollution. Secondary, tertiary and other measures for industrial and commercial premises (C736);
  - National Fire Chiefs Council (NFCC) – Grid Scale Battery Energy Storage System planning – Guidance for FRS;
  - NFCC – Grid Scale Battery Energy Storage System planning – Guidance for FRS - July 2024 Draft Revision<sup>42</sup>;
  - NFPA 855 Standard for the Installation of Stationary Energy Storage Systems<sup>43</sup>;
  - Department for Business and Trade - UK Battery Strategy (2023)<sup>44</sup>;
  - Newark & Sherwood District Council Strategic Flood Risk Assessment Update (2016)<sup>45</sup>; and
  - Nottinghamshire Local Flood Risk Management Strategy (LFRMS) 2021-2027<sup>46</sup>.
- 54 Runoff from the Site shall, in principle, replicate the quality and quantity of the runoff from the Site in its “greenfield” state, in so far as it is reasonable and practicable.
- 55 The existing greenfield average annual flood ( $Q_{BAR}$ ) runoff was calculated as 4 l/s/ha, using the Interim Code of Practice for Sustainable Drainage Systems (ICP SuDS) Mean Annual Flood and Institute of Hydrology (IoH) 124 methods using Info Drainage software, as shown in Plate A9.3.6

**Plate A9.3.6: QBAR (Greenfield) Rate / ha**



Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 4	4.0	4.0	3.3	7.9	10.4

- 56 A SuDS option which will utilise a piped network to drain the BESS Compound to lined / compacted clay layer detention basins is proposed as a way of attenuating the increase in surface water run-off rates at the Development, with a positive discharge to the existing drainage ditch network onsite.
- 57 In the rare event of a battery unit fire the NFCC guidance recommends the ability to capture firewater and not have uncontained releases to the hydrological environment.
- 58 Discharge will be throttled using a Hydro-Brake or similar flow restriction device.
- 59 It will be the responsibility of the Undertaker to maintain effective drainage measures and rectify drainage measures that are not functioning adequately. A nominated person will also have responsibility for reporting on the functionality of drainage measures. This is secured through the Outline Operational Environmental Management Plan (oOEMP, TA A5.5 [EN010162/APP/6.4.5.5]).
- 60 Where areas remain positively drained through the lifetime of the Development, the SuDS measures serving these areas will be checked on a regular basis. Should drainage measures require dredging or unblocking, this will be undertaken as soon as practicable by a local contractor engaged by the management company.

**A9.3.3.1 FIRE SUPPRESSION**

**A9.3.3.1.1 Procedure**

- 61 In the rare event of a battery fire, the procedure outlined in the Outline Fire Safety Management Plan (included in the ES as TA A5.4 [EN010162/APP/6.4.5.4]) will be followed.

- 62 The Undertaker will follow the accepted strategy of allowing a battery related fire to self-consume, reducing unnecessary risk of injury to site and firefighting personnel.
- 63 Should a fire occur, the effected enclosure will be allowed to self-consume until the fire is extinguished through consumption of the combustible materials within the battery container / enclosure. The firefighting procedure will be to apply water for fire suppression to adjacent BESS enclosures as a way of reducing the temperature of the adjacent containers.
- 64 As water will not be directly applied to affected BESS container, there is limited potential for suppression water to become contaminated.

#### A9.3.3.2 FIRE SUPPRESSANT VOLUME

- 65 Based on recommendations in NFPA 855 Standard for the Installation of Stationary Energy Storage Systems and NFCC – Grid Scale Battery Energy Storage System planning – Guidance for FRS, a burn time of 2 hours and a requirement of 1,900 l/min of fire suppression water has been used to calculate the volume of fire suppressant water required to be stored onsite in the event of a container fire.
- 66 This equates to 228 m<sup>3</sup> of storage.
- 67 The SuDS structures serving each catchment of the BESS compound will be sized to accommodate the greater of 1 % AEP + 40 % CC or 228 m<sup>3</sup>, for each catchment drained, and this will be sufficient for storing the full fire suppressant volume.
- 68 An automatic penstock will be placed on the outlet of the SuDS structure and would be shut off in the event of a fire suppression event. It would remain closed until testing of the captured water has taken place. Water will then be removed offsite by tankers to a licenced facility. Penstocks will be regularly tested and serviced when required. There will be a backup power system for the penstock.
- 69 There will also be an impermeably lined (clay or synthetic liner or [appropriate method at the time of construction to be agreed with the EA](#)) holding basin available for spent firefighting water to be pumped to in the event of a battery fire during heavy rainfall. This additional basin will be sized to accommodate 228 m<sup>3</sup>. As such, the SuDS system will not be overwhelmed-during a firefighting event during the 1 % AEP + 40 % CC event.
- 70 Following a fire-fighting event, the impermeably lined (clay or synthetic liner or [appropriate method at the time of construction to be agreed with the EA](#)) holding basin could be repaired or replaced if testing identified that contaminants were present.
- 71 Any containment systems for firewater would be thoroughly cleaned before any penstock was re-opened and drainage resumes.
- 72 It is recommended that the BESS Compound has a shallow bund or cut-off permitter drain to limit the potential for run-off to leave the Development and drain to the cellular storage.

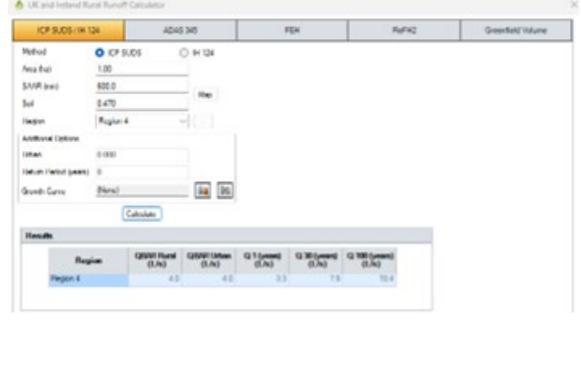
### A9.3.4 WORK AREA 5B: 400 KV SUBSTATION

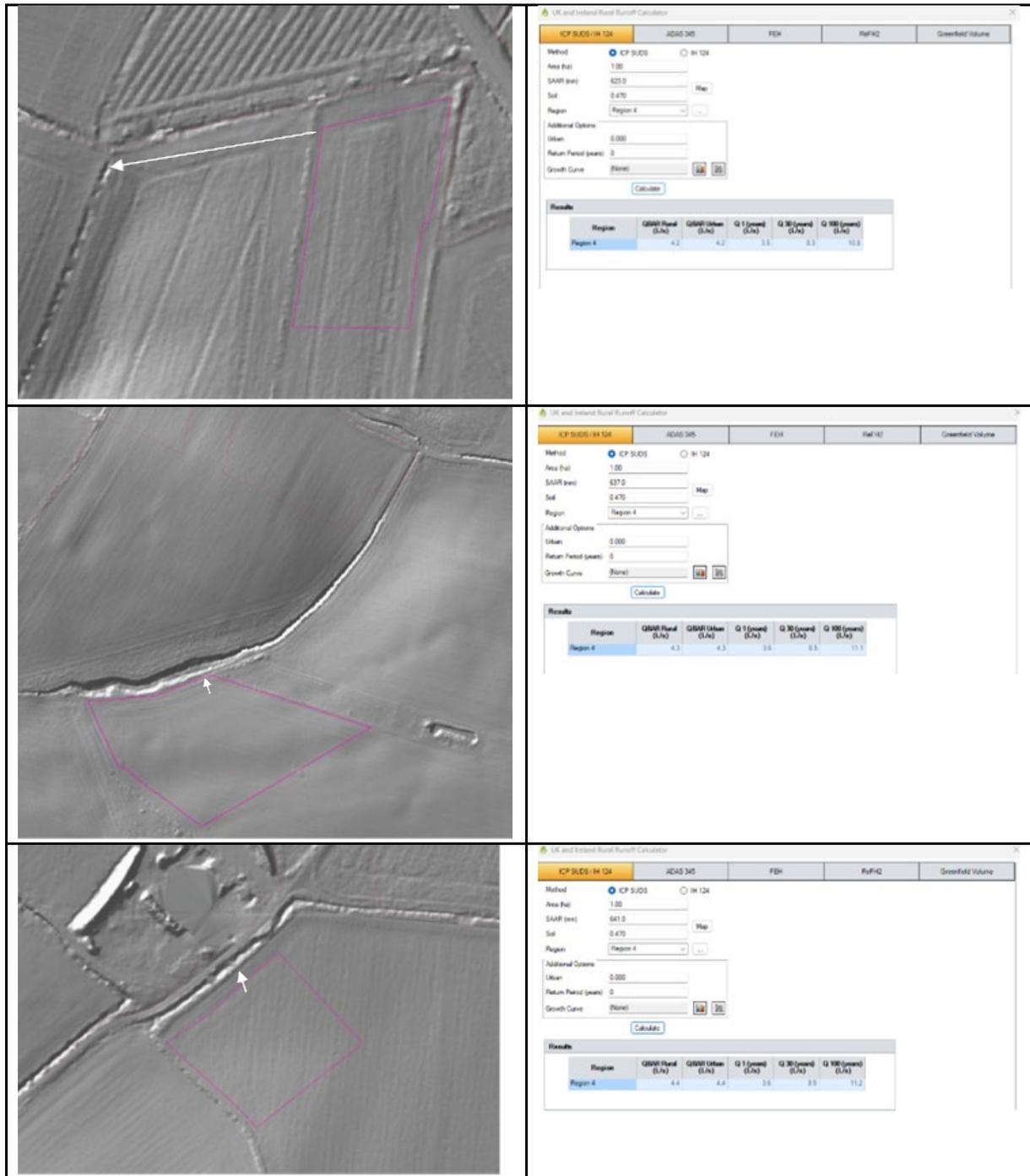
- 73 Surface water for Work Area 5b: Substations will also be managed in a similar manner to Work Area 5a: BESS, i.e. will have a drainage system designed to attenuate the 1 % AEP + 40 % CC.
- 74 The SuDS system will discharge at greenfield rate to a watercourse / field drain, in accordance with the hierarchy of disposal options outline in the SuDS Manual.

### A9.3.5 WORK AREA 4: SUBSTATIONS SURFACE WATER MANAGEMENT

- 75 Surface water for Work Area 4: Substations will also be managed in a similar manner to Work Area 5a: BESS, i.e. will have a drainage system designed to attenuate the 1 % AEP + 40 % CC.
- 76 Infiltration testing at each substation compound within Work Area 4 was undertaken in March to April 2025 and concluded that infiltration is not a viable disposal option due to the presence of clays and mudstone, which is essentially impermeable.
- 77 Infiltration testing results are provided in Appendix B of the FRA [EN010162/APP/6.4.9.1C].
- 78 The SuDS system will discharge at  $Q_{BAR}$  to a watercourse / field drain, in accordance with the hierarchy of disposal options outline in the SuDS Manual.
- 79 Discharge rates per hectare (ha), derived from the IH124 method, and likely discharge destinations are provided in Table A9.3.1.

**Table A9.3.1: Work Area 4 runoff destinations and rates**

Work Area 4 Discharge Location	Rate (l/s/ha)												
	 <table border="1" data-bbox="834 1601 1268 1668"> <thead> <tr> <th>Region</th> <th>100% AEP (l/s/ha)</th> <th>100% AEP (l/s/ha)</th> <th>10% AEP (l/s/ha)</th> <th>10% AEP (l/s/ha)</th> <th>10% AEP (l/s/ha)</th> </tr> </thead> <tbody> <tr> <td>Region 4</td> <td>4.0</td> <td>4.0</td> <td>3.3</td> <td>7.8</td> <td>10.4</td> </tr> </tbody> </table>	Region	100% AEP (l/s/ha)	100% AEP (l/s/ha)	10% AEP (l/s/ha)	10% AEP (l/s/ha)	10% AEP (l/s/ha)	Region 4	4.0	4.0	3.3	7.8	10.4
Region	100% AEP (l/s/ha)	100% AEP (l/s/ha)	10% AEP (l/s/ha)	10% AEP (l/s/ha)	10% AEP (l/s/ha)								
Region 4	4.0	4.0	3.3	7.8	10.4								



80 The detailed design of the SuDS features to serve Work Area 4 is secured through a requirement of the DCO.

### A9.3.6 MAINTENANCE SCHEDULE

- 81 It will be the responsibility of the Undertaker to maintain effective drainage measures and rectify drainage measures that are not functioning adequately. A nominated person will also have responsibility for reporting on the functionality of drainage measures.
- 82 Where semi-permeable areas remain positively drained through the lifetime of the Development, the SuDS measures serving these areas will be checked on a regular basis. Should drainage measures require dredging or unblocking, this will be undertaken as soon as practicable by the Development Operator.
- 83 Tables A9.3.2 to A9.3.6 outline the maintenance schedule for the potential SuDS that will be used within the Drainage Strategy once the detailed design layout has been finalised.

**Table A9.3.2: Operational and maintenance schedule for Filter Drains**

Maintenance Schedule	Required Action	Typical Frequency
<b>Regular maintenance</b>	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly, or as required
<b>Occasional maintenance</b>	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3988:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

**Table 9.3.3: Operational and maintenance schedule for Swales**

<b>Maintenance Schedule</b>	<b>Required Action</b>	<b>Typical Frequency</b>
<b>Regular maintenance</b>	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
<b>Occasional maintenance</b>	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
<b>Remedial actions</b>	Repair erosion or other damage by re-turfing or reseeded	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

**Table 9.3.4: Operational and Maintenance Schedules for Attenuation Storage Tanks**

<b>Maintenance Schedule</b>	<b>Required Action</b>	<b>Typical Frequency</b>
<b>Regular maintenance</b>	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
<b>Remedial actions</b>	Repair/rehabilitate inlets, outlet, overflows and vents	As required
<b>Monitoring</b>	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

**Table 9.3.5: Operational and Maintenance Schedule for Detention Basins**

<b>Maintenance Schedule</b>	<b>Required Action</b>	<b>Typical Frequency</b>
<b>Regular maintenance</b>	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly

	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually
<b>Occasional maintenance</b>	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal where effective upstream source control is provided)
<b>Remedial actions</b>	Repair erosion or other damage by reseeded or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

**Table 9.3.6: Operational and Maintenance Schedules for Ponds and Wetlands**

<b>Maintenance Schedule</b>	<b>Required Action</b>	<b>Typical Frequency</b>
<b>Regular maintenance</b>	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)

	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred	Half yearly
	Check any mechanical devices, e.g. penstocks	Half yearly

### A9.3.7 CONCLUSIONS & RECOMMENDATIONS

- 84 Surface water run off from Work Area 1: Solar PV will be managed through RSuDS techniques such as grassland / wildflower, which will act to bind soils, slow surface water and increase water quality compared to the baseline scenario. Where Solar PV in Work Area 1 is located on slopes of 6 % or greater, then additional measures to slow runoff, such as filter drains and berms, will be implemented.
- 85 Surface water run-off from Work Areas 5a and 5b will be managed through a SuDS option which will utilise a piped network to drain the BESS Compound to lined / compacted clay layer detention basins with a positive discharge to the existing drainage ditch network onsite.
- 86 The Development has Work Areas and does not have a detailed design at this stage, therefore this Outline Drainage Strategy proposes drainage principles which will be secured through a requirement in the draft DCO [EN010162/APP/3.1].