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Sustainable Drainage Health & Safety Schedule

St Pancras Substation, Royal College Street, Camden, London, NW1 0DP

Prepared for UK Power Networks

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Rev00 Draft

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00	203/2024	Initial Issue	Prepared	Christopher Micklethwaite	CAM
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Introduction

The following sustainable health & safety schedules have been developed in association with the proposed re-development at St Pancras Substation, Camden, London, NW1 0DP.

The proposals include the erection of a new car parking and van parking spaces for use of the UK Power Networks operatives and staff, and storage areas. The proposals also seek the creation of a new open metal fence to replace the existing wall.

As a result of the changes, alterations to the existing drainage networks will be undertaken and sustainable drainage provisions will be incorporated in the form of porous paving and attenuation within the car parking area.

The infrastructure at the St Pancras substation site is privately maintained by the UK Power Networks team in conjunction with their appointed sub-contractor partners.

A plan of the proposed surface water drainage strategy, highlighting the catchment area, key SuDS features, and existing sewer outfall can be found in **Appendix A**.

The following health and safety schedules are to be read in conjunction with the associated drainage strategy, flood risk assessment and as-constructed record plans for the proposed re-development. Inspection and maintenance of proprietary products that have been utilised or installed in the existing and proposed networks should be carried out in accordance with the manufacturers recommendations in addition to any site specific works.

Components of the Existing and Proposed Systems

The following components form part of the Private Drainage system and need to be maintained as indicated within the maintenance schedule document.

- Porous Paving parking bays and Perforated Pipes
- Catchpit Manholes
- Cellular Crate Attenuation Tanks
- Control Chamber and Flow Control Device
- Linear Drainage Channel and Sump Units.
- Hydrocarbon interception device – Smart Sponge ™
- Non-return Valve and Chamber
- Bypass Separator/ Interceptor
- Gullies
- Foul water, surface water, and combined manholes and inspection chambers
- Below Ground Drainage Pipes and Rodding Eye Access Points

Health and Safety*

All inspections and maintenance should be undertaken by competent personnel using appropriate procedures and safety equipment. It is anticipated that most of the regular inspections can be carried out from ground level without the requirement to enter underground inspections chambers, manholes or other structures.

The following hazards have been identified:

- Below ground confined spaces (manholes chambers etc.)
- Hydrocarbon contamination.
- Slips, trips, falls.
- Cuts and abrasions.
- Falls from a height.

- Standing water in attenuation, catchpits, and potentially blocked manholes.
- Diffuse pollution and contamination of the surface water runoff in gullies and linear drainage channel sump units.
- Deep drainage infrastructure
- Combined drainage infrastructure

Health and Safety Schedules

The below sets out the heath and safety risks associated with the maintenance of the existing and proposed drainage system.

This document should be considered to compliment and extend the maintenance regime and should be added to, amended, or otherwise changed to suit site circumstances and as experience of maintaining the site drainage systems is gained in the future.

A severe storm is defined as any aspect of weather that poses risk to life, property or requires the intervention of authorities. Severe weather warnings will be issued by the Met Office.

A log of all maintenance and remedial works carried out at the site should be kept. This log is to be passed on should the maintenance contract be given to another organization or the site change ownership.

Sustainable Drainage Systems (SuDs) Health & Safety Matrix

Likelihood		Consequence				
		Insignificant	**Minor**	**Moderate**	**Major**	**Extreme**
		No injury or death	**Minor injury or health effects**	**Injury but not life threatening. Some ill health effects**	**Serious injury. Dangerous near miss. Serious ill health**	**Serious injury or death. Serious life-threatening disease**
Almost Certain (frequent)	Is expected to occur / recur frequently or within a short period of time (most weeks or months)	M	M	H	E	E
Likely (probable)	Will probably occur / recur in most circumstances (several times a year)	L	M	H	H	E
Possible (occasional)	Possibly will occur / recur occasionally (once every few years)	L	M	M	H	H
Unlikely (uncommon)	Uncommon might occur / recur at some time in the future	L	L	M	M	H
Rare (remote)	Unlikely to occur / recur. May only happen in exceptional circumstances	L	L	L	L	M

Risk	**Action**
Extreme Risk (E)	Design Stage – not acceptable – design must be changed. Management stage – immediate attention and response needed to reduce the level of risk.
High Risk (H)	Design stage – not acceptable – design must be changed. Management stage – attention and response needed to reduce the level of risk.
Medium Risk (M)	Design stage – review if it is practical and reasonable to change design to reduce level of risk. Management stage – review options to see if there are practical and reasonable options to reduce risk.
Low Risk (L)	Design stage – acceptable – no changes required. Management stage – no response needed to reduce the level of risk, continue to review on regular basis.

The above matrix and table have been taken from CIRIA document reference '*C753 The SuDS Manual v6*'. This should be reviewed and updated accordingly once operation and initial maintenance schedule has progressed.

General notes

Flow Control Chamber

Head Discharge Flow Control warning signs to be fitted upstream and downstream of control manholes as follows:

Upstream MH to be fitted with safety grid directly below cover. A sign is to be fitted to this grid bearing black lettering on a white backing. The sign will read: : - Head Discharge Flow Control LOCATED DOWNSTREAM
Downstream MH also to be fitted with a safety grid and sign. The sign will read: : - Head Discharge Flow Control LOCATED UPSTREA
Specific installation, maintenance and health & safety requirements from the flow control should be included within the maintenance and health & safety regime / operations and maintenance manual, prior to construction.
Head Discharge Flow Control model and manufacturer is to be confirmed at this time.

Non-Return Valve

Specific installation, maintenance and health & safety requirements from the non-return valve should be included within the maintenance and health & safety regime / operations and maintenance manual, prior to construction.
Non-return valve model and manufacturer is to be confirmed at this time.

Attenuation Crates

Specific installation, maintenance and health & safety requirements from the non-return valve should be included within the maintenance and health & safety regime / operations and maintenance manual, prior to construction.
Attenuation crates model and manufacturer is to be confirmed at this time.

Existing and Proposed Manholes

UKPN to confirm current maintenance and inspection regime.

Existing and Proposed Pipes

UKPN to confirm current maintenance and inspection regime.

Existing and Proposed Gullies

UKPN to confirm current maintenance and inspection regime.

Flow Control Chamber

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the flow control	Risk of flooding / drowning during inspection / remediation.	Rare	Extreme	M	Penstock valve or flow control unit with drain down feature to be installed within flow control chamber to negate the need for direct access to remove blockage. Pumping of water should be undertaken prior to entry to chamber when flooding occurs. Inspect from the surface where possible.	Rare	Insignificant	L
General Inspection	Confined Spaces causing inspector to be trapped / stuck	Possible	Moderate	M	Suitable flow control chamber size to be installed to ensure appropriate space for maintenance. Consideration of space of chamber to be taken prior to entry by inspector (not to have multiple people enter together etc). Inspect from the surface where possible.	Rare	Insignificant	L
General inspection	Slips, trips, falls, cuts and abrasions.	Possible	Major	H	Care to be taken when entering the chamber for wet surfaces which may cause trip hazard. Appropriate PPE to be worn by inspector to protect body and provide improved slip resistance i.e hardhat, work boots, long sleeve clothing, gloves breathing apparatus etc. Inspect from the surface where possible.	Unlikely	Minor	L
General Inspection	Debris within drainage system causing injury during inspection	Unlikely	Moderate	M	Regular maintenance of drainage system to reduce likeness of debris within system. Cleansing of system prior to inspection. Appropriate PPE to be worn at all times when undertaking inspection. Inspect from the surface where possible.	Rare	Minor	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Non-return Valve

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the non-return valve	Risk of flooding / drowning during inspection / remediation.	Rare	Extreme	M	Penstock valve to be installed within chamber to prevent direct access to remove blockage. Pumping of water should be undertaken prior to entry to chamber when flooding occurs. Inspect from the surface where possible.	Rare	Insignificant	L
General Inspection	Confined Spaces causing inspector to be trapped / stuck	Possible	Moderate	M	Suitable chamber size to be installed to ensure appropriate space for maintenance. Consideration of space of chamber to be taken prior to entry by inspector (not to have multiple people enter together etc). Inspect from the surface where possible	Rare	Insignificant	L
General inspection	Slips, trips, falls, cuts and abrasions.	Possible	Major	H	Care to be taken when entering the chamber for wet surfaces which may cause trip hazard. Appropriate PPE to be worn by inspector to protect body and provide improved slip resistance i.e hardhat, work boots, long sleeve clothing, gloves breathing apparatus etc. Inspect from the surface where possible.	Unlikely	Minor	L
General Inspection	Debris within drainage system causing injury during inspection	Unlikely	Moderate	M	Regular maintenance of drainage system to reduce likeness of debris within system. Cleansing of system prior to inspection. Appropriate PPE to be worn at all times when undertaking inspection. Inspect from the surface where possible.	Rare	Minor	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks..	Rare	Minor	L

Porous Paving

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
General inspection	Slips, trips, falls, cuts and abrasions.	Possible	Moderate	M	Appropriate PPE to be worn by inspector to protect body and provide improved slip resistance i.e hardhat, work boots, long sleeve clothing, gloves.	Unlikely	Minor	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing where appropriate) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Catchpits

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the chamber	Risk of flooding / drowning during inspection / remediation.	Rare	Extreme	M	Pumping of water should be undertaken prior to entry to chamber when flooding occurs. Inspect from the surface where possible.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Perforated Pipes

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the pipe	Risk of flooding causing damage or injury	Rare	Moderate	M	Appropriate PPE worn when maintaining perforated pipes. Severe flooding would require pumping of water prior to maintenance.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Attenuation Crates

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the pipe	Risk of flooding causing damage or injury	Rare	Moderate	M	Appropriate PPE worn when maintaining perforated pipes. Severe flooding would require pumping of water prior to maintenance.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Existing Bypass separator

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the bypass separator	Risk of flooding / drowning during inspection / remediation.	Rare	Extreme	M	Inspect from the surface where possible to avoid entering bypass separator entirely.	Rare	Insignificant	L
General Inspection	Confined Spaces causing inspector to be trapped / stuck	Possible	Moderate	M	Inspect from the surface where possible to avoid entering bypass separator entirely.	Rare	Insignificant	L
General Inspection	Debris within drainage system causing injury during inspection	Unlikely	Moderate	M	Regular maintenance of drainage system to reduce likeness of debris within system. Cleansing of system prior to inspection. Inspect from the surface where possible to avoid entering bypass separator entirely.	Rare	Minor	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Existing & Proposed Manholes

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the chamber	Risk of flooding / drowning during inspection / remediation.	Rare	Extreme	M	Pumping of water should be undertaken prior to entry to chamber when flooding occurs. Inspect from the surface where possible.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Existing & Proposed Pipes

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the pipe	Risk of flooding causing damage or injury	Rare	Moderate	M	Appropriate PPE worn when maintaining perforated pipes. Severe flooding would require pumping of water prior to maintenance.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Existing & Proposed Gullies

Activity	Risk / Hazard	Initial		Control Measure		Residual		
		Likelihood	Consequence	Risk Level		Likelihood	Consequence	Residual Risk
Blockages of the gullies and pipes	Risk of flooding causing damage or injury	Rare	Moderate	M	Appropriate PPE worn when maintaining gullies pipes. Severe flooding would require pumping of water prior to maintenance.	Rare	Insignificant	L
Impact offsite	Contaminated silts / diffuse pollutants reducing water quality and / or causing blockages.	Possible	Moderate	M	Regular maintenance (jetting and cleansing) of drainage system to ensure the SuDs components are working effectively and to cleanse of silts and blockage risks.	Rare	Minor	L

Appendix A – Proposed Drainage Strategy and Detailed Drainage Layout Design