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Sizewell C Project

Construction Water Discharge Activity (CWDA) Permit Application MDS/CWDA/90 Technical Supporting Information Document

Sizewell C Limited. Registered in England and Wales. Registered No. 09284825. Registered Office: 90 Whitfield Street, London, W1T 4EZ

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DOCUMENT CONTROL

This document is stored and approved in the Electronic Document and Records Management System (EDRMS).

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REVISION HISTORY

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0.1	Draft	Drafting initial documen	[redacted]	12.12.2024
01	For Issue	Addressing intern l and EA comments	[redacted]	12.12.2024

CONTENTS

1 NON-TECHNICAL SUMMARY

1.1 Purpose of this Document

This technical supporting document accompanies the application for a Construction Water Discharge Activity (CWDA) environmental permit which is required for surface water runoff discharges needed to support the construction works to be undertaken in development of the Sizewell C (SZC) power station, hereby referred to as the 'project', which is subject to the SZC (Nuclear Generating Station) Developme t Consent Order 2022 (referred to throughout this document as the 'DCO'). This permit app ication is eing referred to as MDS/CWDA/90 within the SZC project.

Enabling construction works began in 2022, following the confirmation that it was approved under a DCO. The early construction phase has now commenced, therefore rai fall-d pendent surface water may be encountered during certain activities, will need to be managed. As per the Strategy Surface Water Main Development Site for the Main Development Site (MDS) (Originato s Ref 5213850-SNC-MD-XX-TREP-W-900004) that was approved as part of the DCO submission, where su face water cannot be infiltrated back to ground to replenish groundwater levels, surplus water must b managed and treated appropriately before being discharged to a receiving watercourse (there are no propos d or intended discharges to groundwater under this permit). This is to ensure that the risk of any ollution fr m construction activities taking place on site is avoided or minimised as far as practicable.

As per the Environmental Permitting (England & Wal s) Regulations 2016[1], as amended (the "EPR16"), an environmental permit from the Environment Agency (EA) is required for the proposed discharge activities. This document has therefore been prepared and su mitted s part of the permit application and explains, in as much detail is available at this present tim the nature of the proposed water discharge activities which are to be undertaken as part of the early construct n phase of the project, including any treatment measures that are proposed to be implemented. Specifi ally, thi permit application relates to the discharging of rainfall dependent surface water runoff dur ng the Temporary Construction Area (TCA) construction (late 2025) for the duration of the site construction a tivities (until December 2036). Subsequent permit variations or separate applications may be eq i ed with the development and expansion of the construction programme.

The information provided in this permit application is based on project design information available at the time of writing. Therefore, there may be lements of information that are still subject to change. Where any changes are made which could impact the proposed discharge activities, these will be communicated to the EA during the permit determination p riod.

1.2 Project and Site Description

The site of the SZC development currently under construction is centred at UK National Grid Reference (NGR) TM 47355 64128. is located on the Suffolk coast, approximately mid-way between Felixstowe and Lowestoft, to the north-east of the town of Leiston. The site address being used for the construction works is Sizewell B power station, near Leiston, Suffolk, IP16 4UR (as the nearest operational facility). The site falls within, or within close proximity to, a number of statutory designated sites. These are explained in **Section** Site Setting and Surroundings**2.2** of this supporting document.

This permit application specifically relates to discharges from three outfalls within the TCA. The TCA is an area within the MDS, which includes the following areas:

[1] The Environmental Permitting (England and Wales) Regulations 2016

- Main Construction Area (MCA);
- TCA; and
- Ancillary Construction Area (ACA).

This permit application relates to only the TCA part of the MDS. It does not apply to either the MCA or ACA.

This CWDA permit application and the associated supporting documents on direc y p rtain to the three outlets located in the TCA. The specific construction and proposed discharge activit es that wi be taking part in the TCA are explained in more detail within **Section 3** of this supporting technical document.

1.3 Scope of Permit Application

There is a requirement under the Environmental Permitting Regs, Schedule 2 th t rainfall-dependent surface water run-off encountered on site is managed appropriately so as n t to cause any pollution. Due to the topography and catchment zones which have been developed as par of the project design in the TCA, numerous discharge points are required to facilitate positi e surface water drainage. For clarity, and as previously indicated, this permit only pertains to the th ee propo ed outlets O1, O2 and EO3 located in the TCA. These discharge points are referred to as 'outlets' t roughout t e remainder of this document, each with its own reference number. Each of the proposed discharge ctivitie and outlets are described in further detail below in **Sections 3** and **4**.

In summary, the proposed discharge and associated outlets included within the scope of this permit application are limited to the following:

- Discharge of rainfall-dependent s rface water run-off from Water Management Zone (WMZ) 1 of the TCA to the upstream tributary of the L iston Drain watercourse at Outlet O1.
- Discharge of rainfall-depe dent surface water run-off from WMZ 2 of the TCA directly to the Leiston Drain at Outlet O2.
- Discharge of rainfall dep ndent surface water run-off from WMZ 3 and WMZ 4 of the TCA to the upstream tributary of t e Le ston Drain at Outlet EO3.

Relevant site drawings have been ncluded either within this document or as appendices (which show more detail) to show the location of each proposed discharge outlet. An overall General Arrangement layout drawing which shows the location of all the above-proposed discharge outlets across the TCA, encompassed within the DCO red line boundary can be found in **Appendix B.**

1.4 Structure of Permit Application

This permit appli tion sets out the background, context and relevant design information in relation to the proposed water dis harge activities. This technical supporting document is intended to be read in conjunction with the completed GOV.UK permit application forms and other supporting documents submitted as part of the application.

The technical supporting document is set out as follows:

- **Section 1** – Non-Technical Summary (this section)
- **Section 2** – Introduction and Context. This section introduces the proposed discharge activity and summarises relevant contextual, background information from the project.
- **Section 3** – Scope Of Permit. This section summarises the overall scope of the permit being applied for.

- **Section 4** – Proposed Construction Water Discharge Activity (CWDA). This section provides detail with regards to the proposed discharge activities, including the anticipated discharge effluent composition, flow rates, volumes and durations, and information on how these aspects have been predicted / calculated.
- **Section 5** – Supporting Risk Assessment. A qualitative risk assessment has been developed as per the relevant GOV.UK Guidance on undertaking risk assessments for bespoke water discharge activity permit applications[2]. Note that a Surface Water Pollution Risk Assessment (or formerly, H1 type assessment) has not been undertaken as there are not anticipated to be any specific substances present in the discharge) and there are no discharges of groundwater within the scope of this permit application.
- **Section 6** – Monitoring and Sampling Arrangements. Ultimately any monitoring and / or sampling arrangements will be dependent upon the requirements set out in the environmental permit, however this section has been included in the technical supporting document to provide an indicative overview of what arrangements are considered likely to be required.
- **Section 7** – Environmental Management System (EMS) Arrangements The proposed CWDA's will be subject to the requirements of the SZC EMS. This will ensure that there are effective processes and / or procedures in place regarding management of the discharge activity. A summary of the SZC EMS has been included within this technical supporting document
- **Section 8** – Concluding Remarks

1.5 Environmental Management Measures

Pre-Application discussions with the EA commenced in November 2024 and were concluded in January 2025, for discussion of the proposed discharge activities and this permit application. These pre application meetings enabled SZC to confirm and clarify the details in environmental management measures adopted as part of previous construction activities permit applications and how they pertain to those activities detailed within this permit application. A number of the documents previously presented in support of other construction permitting activities directly correspond and provide detail on measures that will be adopted as part of this application. These included a bespoke environmental risk assessment presenting details of the proposed mitigations to be employed for the discharges under this permit. Relevant details and documents which have formed part of the pre-application discussions will be provided as part of this document to align all proposed activities with relevant submissions.

These documents and risk assessment are included as appendices to this document, where applicable and referred to. The risk assessment undertaken has addressed the source-pathways-receptors likely to be present on site and has also considered whether there is the potential for any specific pollutants and / or hazardous substances to be present within the discharge itself. Details of specific control / mitigation measures have been included where known.

All discharge activities will be subject to the requirements of the SZC EMS that will be applied on site. This will ensure that there are effective processes and / or procedures in place regarding management of the discharge and treatment activities on site. As part of the management requirements, water quality monitoring and sampling will be undertaken to identify any potential changes in conditions and to ensure that the discharge activities are not resulting in pollution. A summary of the SZC EMS has been included within this technical supporting document (see **Section 7**).

[2] Risk assessments for your environmental permit - GOV.UK

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1.6 Provision of Additional Information

This technical supporting document contains all the information required to support the permit application being made. However, we identify in relevant sections where information may still be subject to change, for example due to final detailed design specifications being released, or where construction sequencing information is to follow. This information will be made available to the EA throughout the permit determination process, if and where required.

1.7 Key Definitions

The below table includes the acronyms used throughout this technical supporting document.

Acronym	Definition
ACA	Ancillary Construction Area
BOD	Biochemical Oxygen Demand
CDO	Combined Drainage Outlet
CEMP	Construction Environmental Management an
CoCP	Code of Construction Practice
COD	Chemical Oxygen Demand
CIRIA	Construction Industry Re earch nd Information Association
CRoW	Countryside and Rights of Wa
CWDA	Construction Wate Disch rge Activity
CWS	County Wildlife Site
DCO	Development Con ent Orde
EA	Environment ge cy
EDRMS	Elec nic Documen and Records Management System
EMS	Enviro mental Management System
EPR 16	Environm ntal Permitting (England and Wales) Regulations (EPR) 2016, as amended
EQS	Environmental Quality Standards
ERA	Environmental Risk Assessment
FEH	Flood Estimation Handbook
FSR	Flood Studies Report
FRAP	Flood Risk Activity Permit
HRA	Habitats Risk Assessment
IMS	Integrated Management System
MAR	Main Access Road
MCA	Main Construction Area
MCERTS	EA Monitoring Certification Scheme
MDS	Main Development Site
MMP	Material Management Plan
NGR	National Grid Reference

Acronym	Definition
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PINS	Planning Inspectorate for England
RAMS	Risk Assessments Method Statements
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SS / TSS	Suspended Solids / Total Suspended Solids
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
SZC	Sizewell C
TCA	Temporary Construction Area
UKAS	United Kingdom Accreditation Se vice
WFD	Water Framework Directive
WMZ	Water Management Zon

1.8 Appendices

Ref	Title	Document Refer ce	Do ment ID /Revision Number	Protective Marking Status	Summary
A	Appendix A1 – Environmental Permit Application Forms (Parts A & F1)	01421598	(N/A)/ P01	Protectively Marked	Required GOV.UK application forms to support permit application.
	Appendix A2 – Environmental Permit Application Forms (Parts B2 & B6)	1014 1603	(N/A)/ P01	Not Protectively Marked	Required GOV.UK application forms to support permit application.
B	Appendix B - CWDA-90 Outlet Locations Drawing	101404710	5213850-SNC-XX-XX-DDRW-W-900090/ P01	Not Protectively Marked	Design drawing showing the location of all discharge outlets included within the scope of this permit application.
C	Appendix C – CWDA-90 Outlet O1 (WMZ 1) Drawing	101404712	5213850-SNC-05-XX-DDRW-X-900001/ P01	Not Protectively Marked	Design drawing showing current design of Outlet O1 (WMZ 1).
D	Appendix D – CWDA-90 Outlet O2 (WMZ 2) Drawing	101404713	5213850-SNC-03-XX-DDRW-X-900001/ P01	Not Protectively Marked	Design drawing showing current design of Outlet O2 (WMZ 2).
E	Appendix E – CWDA-90 Outlet EO3 (WMZs 3 & 4) Drawing	101404716	5213850-SNC-03-XX-DDRW-X-900003/ P01	Not Protectively Marked	Design drawing showing current design of Outlet EO3 (WMZs 3 & 4).

Ref	Title	Document Reference	Document ID /Revision Number	Protective Marking Status	Summary
F	Appendix F – Qualitative Environmental Risk Assessment	101404726		Not Protectively Marked	Supporting assessments required as per GOV.UK permit application requirements.
G	Appendix G – DCO Drainage Strategy Extract	101253794	(N/A)/ P02	Not Protectively Marked	Extract from the Development nsent Order Drainage Strategy to supp t Section 4 of this docum nt.
H	Appendix H – Surface Water Baselining Assessment Appendix A, A2, B and B2 Appendix C, C2, D, E2, E3	101404729 101431491 – 101431494 101431496 - 101431500	5213850-SNC-XX-XX-TREP-X-900017/ P01	Not Pro ectively Mark d	upporting assessments required as per GOV.UK permit application requirements.
I	Appendix I – Habitats Regulation Assessment (HRA) and Countryside Rights of Way (CRoW) Assessment Information Package	101404730		No Protectively Ma ked	Supporting assessments required as per GOV.UK permit application requirements.
J	Appendix J – List of Directors	010295874		Protectively Marked	List of Sizewell C Limited Directors to inform Permit Application form Part A.

2 INTRODUCTION AND CONTEXT

2.1 Background to CWDA-90 Requirements

This section of the supporting technical document details the proposed activities (construction and operation of three separate outlets and upstream drainage construction works proposed that will ultimately result in three separate discharges to the Leiston Drain Site of Special Scientific Interest (SSSI) (O1 and EO3 to the upstream tributary to the Leiston Drain and O2 directly to the Leiston Drain). It introdu es the area of the MDS where the project is taking place, specifically the TCA where the three proposed disch rge activities will be located, before outlining the regulatory requirements that apply to the proposed activit .

This section also sets out where the relevant information pertaining to he required GOV.UK permit application forms has been included, either within this document or on the applicatio forms themselves to help aid the permit Duly Making process.

2.2 Site Setting and Surroundings

2.2.1 Site Setting

This permit application relates to three specific discharge ctivities that are required to support construction activities for the duration of works within the TCA for e project: the discharge of surface water run-off from outlets O1, O2 and EO3 to the Leiston Drain.

As described above, the project site is located the Su folk coast, approximately mid-way between Felixstowe and Lowestoft, to the north-east of the town of L iston.

The project site is split into several different ar as. The proposed water discharge activity and therefore this environmental permit application is inked o the TCA area of the MDS.

The TCA encompasses the area of land ated primarily to the north and west of the MCA and to the north of Sizewell Marshes SSSI. This area is to be used for temporary construction purposes only and will house various aspects including contractor / worker pus accommodation and welfare facilities, haul roads, construction laydown areas and stockpiles, co crete batching plant and other treatment plants (e.g., for foul, surface and ground water). All outlets (O1, O2 nd EO3) will be located within the south-east of the TCA. **Figure 1** below shows the SZC MDS site boundary (DCO red line boundary).

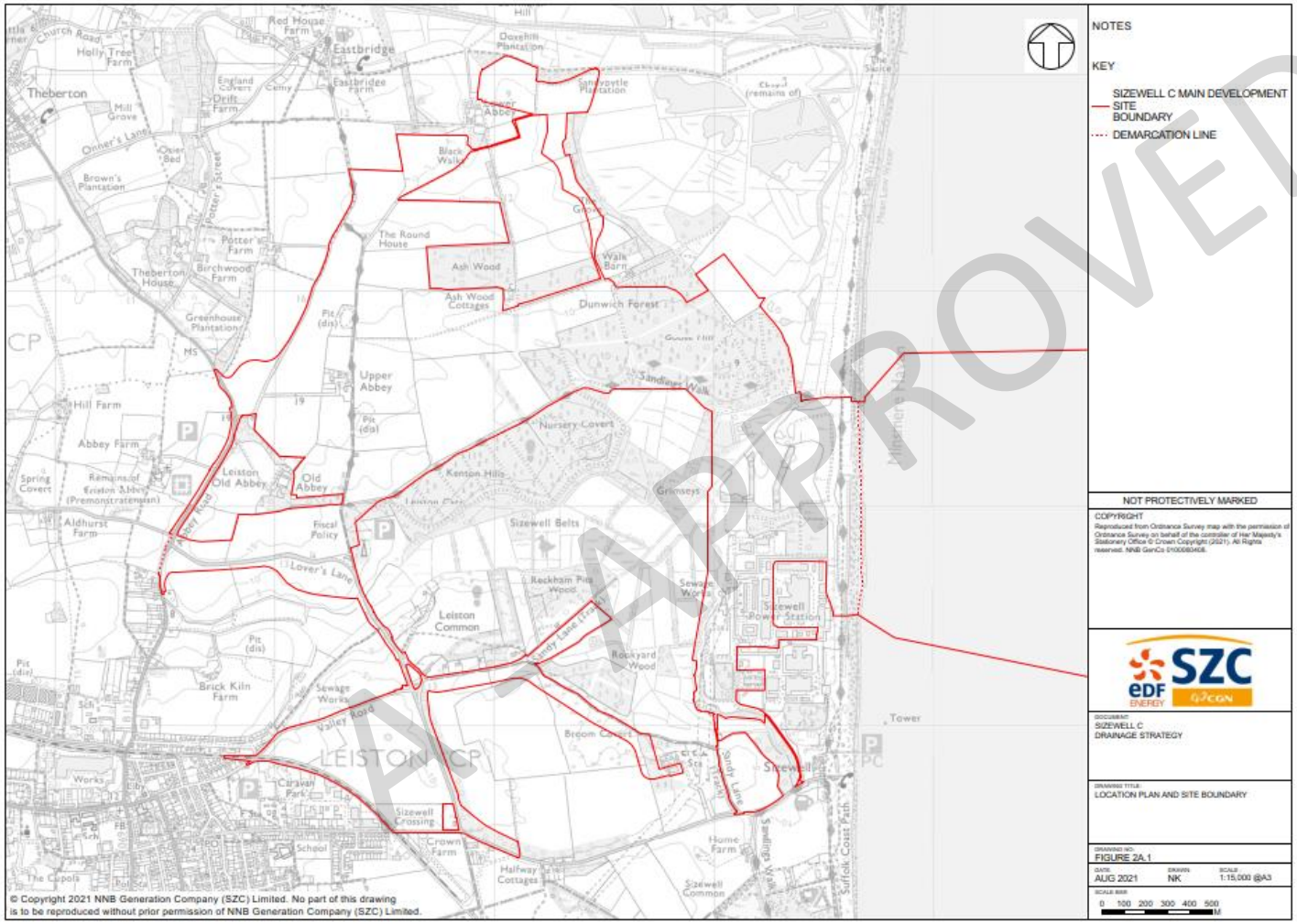

Figure 1– Main Development Site Red Line Boundary (Document No. Figure 2A.1)

2.2.2 Site Surroundings

In terms of the site surroundings, there are several areas subject to statutory designations in close proximity including:

- Sizewell Marshes SSSI;
- Outer Thames Estuary Special Protection Area (SPA);
- Southern North Sea Special Area of Conservation (SAC) and Suffolk Co stal w terbody;
- Minsmere-Walberswick Ramsar;
- Minsmere to Walberswick Heaths & Marshes SAC; and
- Suffolk Coast and Heaths National Landscapes, which the site fa ls within.

The TCA sites lie within a Flood Risk Zone, with parts falling within Flood Risk Zone 3, which is described as having a higher probability of flooding from rivers and the sea Parts of the site are protected by existing flood defences. A separate Flood Risk Assessment was completed as part o the DCO stage (Volume 5.2 Main Development Site Flood Risk Assessment, May 2020, Pl nning In pectorate for England (PINS) Reference Number EN0100123[2]), and this has been used to inform oth constr ction and operational design elements of both the construction and operation of the outlets and TCA site a ea. The current flood map for planning extents of the Flood Risk Zone is shown in Figure 2 below. Flood Risk Activity Permits (FRAPs) have been / will be applied for where required (FRAPs are ou side the ope of this permit application).

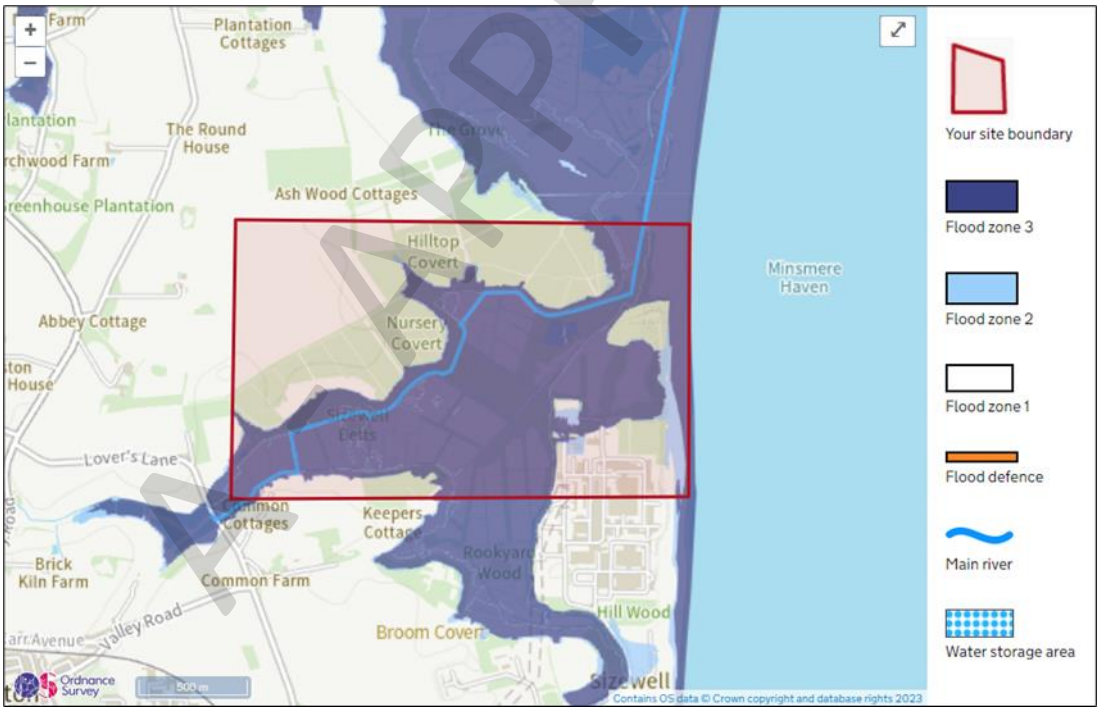

Figure 2 – Flood Risk Designation

The underlying geology and hydrogeology of the site was considered during the DCO planning process and outlined in detail within the supporting Environment Statement (6.3 Volume 2 Main Development Site Chapter

[2] MDS FRA Draft V1 (planninginspectorate.gov.uk)

19 Groundwater and Surface Water, PINS Reference number EN010012[4]). By way of summary, the project is being sited upon a bedrock geology of Crag formation underlain by chalk, with superficial geology comprising marine beach deposits, tidal flat deposits, Lowestoft formation, peat deposits and made ground (within the MCA). The bedrock is classed as a Principal aquifer, with part of the superficial drift designated as a Secondary A aquifer. The site is not located within a groundwater source protection zone.

Other key features and receptors that have been considered either within the DCO and / or the assessments undertaken to support this permit application and wider construction activities include (but are not limited to) the following:

- Minsmere to Walberswick SPA
- Existing Sizewell B power station facilities
- Watercourses in the area, including the Leiston Drain (part des gnated as a main river) and Sizewell Drain (ordinary watercourse and the upstream tributary of L iston D ain
- Plantation woodland associated with Dunwich Forest / Goose Hi l which is also designated as Sizewell Levels and Associated Areas County Wildlife Site (CWS) and Co nation Wood
- Sizewell Beach and Suffolk Coast Path, including the Suffo k Shingle Beaches CWS
- Thames Estuary SPA and the southern North Se SAC and he Suffolk Coastal waterbody. There are no proposed discharges to the coastal wate s as co red within this permit
- Existing properties, including the Upper Abbey F m and the Round House

A number of these sites are not directly relev to the permit details but have been provided to illustrate the wider environmental context and constraints ass ciated with the surrounding area.

The environmental risk assessments undertake to support this permit application are summarised in **Section 5** of this technical supporting document a d other specific details pertaining to the assessment are provided as appendices.

The impacts of the project, including asso iated construction works, on the site settings and surrounding features were considered in a Hab ts Regulations Assessment (HRA) as part of the DCO planning requirements. However, a separate HRA and Countryside and Rights of Way (CRoW) assessment will need to be undertaken specifically in relation to this permit application and the proposed discharge activities from the outlets highlighted within this application (see **Section 5** below).

2.3 Construction Phasing of Works

Work to cons ru the SZC power station will take place under the DCO. Construction is anticipated to take between 9-12 y ars nd will be undertaken in phases, each of which will likely require associated construction water discharge ctivities and respective permit application(s) and / or permit variations. Phasing and construction sequencing is still on-going; therefore, this permit application has been developed to support part of the discharge activities required in the 'early' construction phase and for the duration of construction within the TCA. This is to support the later construction activities to take place, namely the works necessary to prepare the MDS (e.g., main civil works and marine works construction).

The below table has been included within this permit application to provide context only in terms of what likely activities will be taking place across the proposed development throughout the TCA construction period. More

[4] EN010012-001912-SZC_Bk6_ES_V2_Ch19_Groundwater_and_Surface_Water.pdf (planninginspectorate.gov.uk)

detail on the specific activities leading to the requirement for discharging to take place are set out in **Section 3** below.

This permit application does not relate to any aspects of the commissioning, operational and / or decommissioning phase(s) of the Sizewell site.

Further information on the specific activities and construction areas comprised within the TCA that are relevant to this surface water discharge permit are further detailed in Section 4 of this document.

Table 1: Early Construction Activities (relevant to this applica ion)

Construction Phase	Construction Site Area	Summary of Construction Works to ke place
Phase 1: Site establishment and preparation of earthworks (Years 1-2) General site clearance across main development and installation of security fencing.	TCA	Excavation of borrow pits Installation of acoustic mitigat n an security fencing Stockpiling of excavated m terial Laying out of construction ro ds and p rk ng Realignment of Lovers Lane and relocation of B1122 junction Southern earth bund c truction
Phase 2: Main Site Earthworks and Completion of Temporary Infrastructure (Years 1-4)	TCA	Temporary fa ilities and temporary railway track and associated infrastructure Excava on a d backfilling of borrow pits Stock iling o vated materials Accomm ation campus and associated infrastructure constructed and per ional Realignment of Eastbridge Road V hic lar access onto the B1122 Site e trance hub developed and operational Realignment of Lovers Lane Kenton Hills car park upgraded Vehicular access onto lover's lane.

2.4 Regulatory Context

In accordance with the EPR 16, a be poke CWDA permit will be required for the proposed discharge activities to take place. Under Schedule 21[5] of the Permitting Regulations, the definition of the activities being applied for is 'the discharge or entr to inland freshwaters of trade effluent', as the discharge will consist of rainfall-dependent surface water run-off.

The water d c rge activities to be undertaken are described in detail within **Section 4** of this technical supporting doc men . The discharges will be made from three outlets and will all comprise of treated surface water run-off fro the TCA of the construction site (as described above). The receiving watercourse for the proposed discharge of treated surface water is the Leiston Drain (main river).

The discharge activity type under the Permitting Regulations is:

- 1.3.12 – Trade effluent and / or non-sewage effluent discharges to surface water or groundwater with a volume greater than 5m³ a day.

[5] https://www.legislation.gov.uk/uksi/2016/1154/schedule/21

As part of the permit application process, the following guidance has been followed and referenced, where applicable:

- GOV.UK guidance Discharges to surface water and groundwater: environmental permits[6]
- GOV.UK guidance Risk assessments for your environmental permit[7]
- GOV.UK guidance Surface water pollution risk assessment for your environmental permit[8]
- The Construction Industry Research and Information Association (CIRIA) Sustainable Drainage Systems (SuDS) Manual 2015[9]

In addition to this technical supporting document, the following application forms h ve been completed (please refer to **Appendix A**):

- Part A About you
- Part B2 New bespoke permit
- Part B6 Bespoke water discharge activity (including Se ion 2: Discharges to non-tidal river, stream, ditch or canal)
- Part F1 Charges and declarations

The company applying for the permit, and which will act a 'legal operator', is SZC Limited.

Other environmental permits, consents and/or li ence including CWDA permits, are being or will be applied for separately as required. They are not included i th scope of this application.

2.4.1 Pre-Application Regulatory Engagement

Pre-application discussions with the EA have ken place since an initial regulatory engagement session in November 2024 and were concluded in January 2 25. The pre-application discussions have enabled specific aspects of the environmental permit ppli ation to be shared and reviewed prior to submission to ensure that all relevant regulatory requirements an other considerations (where applicable) have been appropriately addressed. Records of engagem nt sessions during pre-application have been maintained throughout the preparation for this permit applicati n. These have helped to ensure all required information is contained within the permit application and his technical supporting document.

2.4.2 Duly Making Information

The below section outlines the questions from the application forms described above and pinpoints which section of this supporting technical document (where relevant) contains information to support the permit duly making proce The application forms themselves also cross-reference to the relevant sections of this technical suppo ting document.

Table 2 - Duly Making Information

Application Form Question Reference	Location of Required Information (within this technical supporting document or application form)
Part A About you	See List of Company Directors document (**Appendix J**).
Part B2 New bespoke permit	

[6] Discharges to surface water and groundwater: environmental permits - GOV.UK (www.gov.uk)

[7] https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

[8] https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit

[9] https://www.ciria.org/ItemDetail?iProductCode=C753F&Category=FREEPUBS

Application Form Question Reference	Location of Required Information (within this technical supporting document or application form)
1 About the permit	1a. See **Section 1.5** above. 1b. Refer to application form. 1c & 1d. Not applicable.
2 About the site	2a. Refer to application form. 2b. Refer to application form & see **Section 4.3** below. 2c. Not applicable. 2d – 2g. Refer to application form
3 Your ability as an operator	3a – 3c. Not applicable. 3d. Refer to application f m and **Secti n 7** below.
4 Consultation	4a – 4d. Not applicable.
5 Supporting Information	5a. Refer to **Appendices B-E**. nly information currently available at the t me of writing the application has been included. Therefore, me asp cts may not be included where they are till subj t to final design and contractor appointment. This nformation will be provided to the EA once kno 5b. Not applicable. 5c. **S ction** (above). 5d Refer to ap lication form.
6 Environmental Risk Assessment	See **Section 5** be ow.
Part B6: New bespoke water discharge activity	
1 About the effluent – details and type	1 Refer to application form. 1 See **Section 4** below. c. Refer to application form. 1 Refer to application form and see **Section 2.4.1** above.
2 About the effluent – how long will you need o discharge the effluent for?	2a & 2b. Refer to application form. 2c & 2d. Not applicable. 2e. Refer to application form.
3 How much do you want to discharge	3a. Not applicable as the discharge does not relate to a discharge of sewage effluent containing rainwater. 3b – 3e. Refer to application for and see **Section 4** below.
4 Intermittent sewage discharg	Not applicable.
5 Should your discharge be made to the l sewer?	Not applicable.
6 Nutrient neutral	6a. Refer to application form. 6b & 6c. Not applicable.
7 How will the effluent be treated?	7a. Refer to application form. 7b. Refer to application form and see **Section 4** below. 7c. Refer to application form and see **Section 4** below. 7d. Not applicable. 7e. Not applicable. 7f. Not applicable. 7g. Refer to application form and see **Section 4.4** and section 6 in document below detailing proposed capture and treatment.
8 What will be in the effluent?	8a. Not applicable (refer to application form). 8b & 8c. Refer to application form and see **Section 6** in document below detailing proposed effluent quality 8d. Refer to application form and **Appendix F**. 8e. Not applicable.
9 Environmental Risk Assessments	9a. Refer to application form. 9b. – 9e. Not applicable. 9f. Refer to application form and see **Appendices F** and **H for qualitative environmental risk assessment**.
10 Monitoring arrangements	10a. Not applicable. 10b. See **Section 6** below.

Application Form Question Reference	Location of Required Information (within this technical supporting document or application form)
	10c. Not applicable. 10d. See **Section 6.3** below. 10e. & 10f. Refer to application form. 10g. – 10i. Not applicable. 10j. See **Appendices B – E**. 10k. Refer to application form.
11 Where will the effluent discharge to?	11a. Refer to application form 11b. Refer to application fo m and **S ction 4**. 11c. See **Section 4** and **Appendices B** - .
Part F1 – Charges and Declarations	Based on the activity refere ce, whic was confirmed with the EA during Pre Application, th fee for the permit application amoun s to **£1 ,901**. This fee amount cover all three proposed discharge activities, the Habi ats Regulation Assessment and also the advertisin fees for he permit application. Details of this have ben separate y pr vided to the EA Alt native pa ment arrangements have been made (as ide tified on th application form – see added text). These have een agre d with the EA during Pre-Application.

3 SCOPE OF PERMIT APPLICATION

This section of the supporting document outlines the construction activities that are anticipated to take place within the TCA, the part of the site subject to this permit application. It provides context to the proposed discharge activities and associated management and treatment requirements. Final designs for surface water drainage networks in accordance with requirement 5 of the DCO have been submitted for WMZ 1 & WMZ 2. WMZs 3 & 4 are in final stages of development and will be submitted in early 2025

The below information has been based on design information that is availab e at this stage of the project and may, therefore, be subject to some degree of change. The EA will be kept inf rmed o any design or other project-related information changes that could impact upon the proposed discharge c ivities within the scope of this permit application, as necessary. However, the discharge loc tions and receiving receptor are not anticipated to change.

The construction programme (from a surface water perspective) will be split into an early enabling works phase, and then a longer-term construction phase. The enabling w rks are required to prepare the site for the main construction works associated with the project to tak lace (e.g., earthworks, topsoil stripping, access routes, material storage). This permit application relate to discha ges which are expected to be required as part of the construction works within the TCA; the s ope of th permit application includes the below discharges only:

- TCA: Discharge of rainfall-dependent su face water run-off from WMZ 1 via Outlet O1 to a tributary of the Leiston Drain.
- TCA: Discharge of rainfall-depend nt su face wa er run-off from WMZ 2 via Outlet O2 to the Leiston Drain.
- TCA: Discharge of rainfall-d pendent su face water run-off from WMZ 3 and 4 via Outlet EO3 to a tributary of the Leiston Dr n.

Information on anticipated discharging d rations of each outlet is included in **Section 4** below.

3.1.1 Discharges Excluded from thi Permit Application

Future CWDA permits (in addition to this application) may be required to support construction of the project, or potential variations to this permit (if successfully determined). These are not included within the scope of this permit application. As well as this application, a previous application – CWDA18 (EPR/RP3820SH/A001) – has been made and a future permit is intended to be applied for in 2025 for the Combined Drainage Outlet (CDO) (CWDA 13). Any changes or additional variations would be considered when or if needed.

3.1.2 Source of Planned Discharges

The below sections describe the construction works taking place in the TCA while **Section 4** summarises each proposed discharge activity in more detail with regards to the effluent characteristics. The site drainage and sources of runoff are to comprise rainfall-dependent surface water run-off from construction areas, including for example temporary or permanent hardstanding, stockpile areas, fuel and chemical storage areas, vehicle and plant parking areas.

3.2 Summary of Construction Activities by Discharge Location

3.2.1 TCA Activities – Rainfall-Dependent Surface Water Run-Off Discharges to Outlet O1

Outlet O1 will be located immediately adjacent to WMZ 1 basin. The WMZ 1 basin is currently a woodland greenfield site bounded by further woodland. The catchment contributing to the WMZ basin is approximately 16.03 ha in area. The catchment will be developed to include several service plots (use to be determined in the future), a fuel storage facility, a haul road, and part of the Main Access Road (MAR)

3.2.2 TCA Activities – Rainfall-Dependent Surface Water Run-Off Discharges to Outlet O2

Outlet O2 will be located immediately adjacent to WMZ 2 basin, which is also curre tly a woodland greenfield site. The catchment contributing to the WMZ basin is approximately 18 8 ha in area. The site will be developed to include a rail head, concrete batching plant, the containment liner pre brication facility, several serviced plots (use to be determined in the future) and part of the MAR.

3.2.3 TCA Activities – Rainfall-Dependent Surface Water Run-Off Dis harges to Outlet EO3

Outlet EO3 will receive surface water drainage from TCA WMZ 3 a d WMZ 4 basins.

The TCA WMZ 3 is currently a greenfield agricultural site bounded b woodland to the south and grassland to the north. The catchment contributing to the WMZ basin appr ximately 20.58 ha in area. The site will be developed to include a rail head, material laydown area serviced plots (use to be determined in the future), a haul road, and part of the MAR.

The TCA WMZ 4 is currently a greenfield agric ltural ite bounded by grassland on each side. The site is approximately 33.75 ha in area. The site ill be eveloped to include stockpiles, a water tankering facility, a haul road, and part of the MAR.

WMZ 4 will have a connection to a non-in ltration storage basin within WMZ 3. From WMZ 3, water will be treated, if necessary, prior to discharge via Outlet EO3 to a tributary of the Leiston Drain, ultimately discharging into the Leiston drain within the Sizewell M rshes SSSI.

4 PROPOSED CONSTRUCTION WATER DISCHARGE ACTIVITY (CWDA)

This section describes the proposed discharges that will be required as part of the construction works outlined in **Section 3** above and are therefore included within the scope of this permit application. There are three discharge activities being applied for – O1, O2 and EO3. These will comprise the discharge of rainfall-dependent surface water run-off from designated catchment areas across the TCA. As stated in **Section 1**, all discharges pertinent to this permit application will be conducted and performed in acc dance with the DCO and subsequent design.

4.1 Overview of Drainage Design Principles and Methodology

A Drainage Strategy[2] for the site was submitted and approved as part of he DCO process that was undertaken. This outlined the overarching principles that will be applied toward t e man gement of surface water run-off during both the construction and operational phases of the project. Overall, it is intended that, where possible, water will be retained within the site (to limit disruption to th background water levels and flows) and that this will be achieved through infiltration of run-off back to ground (withou ntervening use) SuDS (as discussed further below) will be applied. The outlets therefore being applied for within this permit application are intended to be used only as and when required, for example when filtration rates are less due to periods of prolonged rainfall and saturated ground conditions.

The key aspects that were considered in the development of this approach and the wider Drainage Strategy included:

- How to control the quantity of surface ater ru -off from a flood risk perspective (so as not to cause any likely increases in terms of flood risk .
- To avoid adverse impacts in t ms of t e background water levels within the Sizewell Marshes SSSI and aim to mimic natural hydrolo cal processes.
- To take into consideration prox mity of any protected species / habitats
- To manage the quality of th un-off to prevent pollution to receiving environments.

In summary, the following princip e apply to the drainage methodology:

- Design methods and principles from the CIRIA SuDS Manual will be incorporated where possible to avoid or reduce the need for discharges of surface water run-off to receiving watercourses. The SuDS Manual is considered best practice with regards to managing surface water run-off.
- The SuDS hierarchy presented below has therefore been applied, where feasible, as part of the MDS Drain ge Str gy:
    - Store rainwater for later use (e.g., rainwater harvesting)
    - Use infiltration techniques (e.g., porous surfaces)
    - Attenuate rainwater in basins or open water features for gradual release to agreed waterbodies through outlets
    - Attenuate rainwater by storing in tanks for gradual release to agreed waterbodies through outlets, and
    - Discharge rainwater direct into watercourse or sea.

- Where surface water is proposed to be infiltrated to ground, infiltration rates have been confirmed through on-site testing. Where surface water cannot be discharged via infiltration, it will be treated and discharged to existing watercourses (as explained in the below paragraph).
- The overall surface water drainage design aims to retain the existing undeveloped site drainage conditions by infiltrating surface water to ground where possible. The aim of this is to maintain groundwater recharge as the Sizewell Marshes SSSI is sensitive to changes in groundwater levels.
- As per the DCO discharges from the outlets will be limited greenfield run ff rates. Due to the natural soils having high permeability, greenfield run-off rates for frequent ainfall e nts are very low and use of such rates would result in impractical storage requirements. SZC Co hav therefore proposed to restrict discharge rates to the greater of 1 l/s/ha or QBAR (mean ann al flood - the value of the average annual flood event recorded in a river). For outlets O1 and O2 we are proposing a QBAR value of 1.5/l/ha, for outlet EO3 we are proposing to use 50% this valu due to concerns about introducing to large a point flow for WMZ3 and 4 combined
- SuDS have been prioritised to aid pollution cont ol The primary pollutant of concern from construction sites is silt / sediment, or suspended solids. The d inage design has been developed such that SuDS are proposed for treatment, mai tenan and sustainability benefits, in so far as can be practicable. The methods proposed will provide pollut on control and aim to mimic the existing drainage characteristics to prevent impact on designated habitats. To ensure compliance with permitted concentrations of Total Susp ded So d (TSS), additional active treatment will be provided between the storage basin a d discharge point. Active treatment will be used on an as-needed basis when online water quality monitors indicate that the there is a risk of non-compliant water being discharged.

The proposed activities requiring permitt g a e explained in **Section 4.3** further below. Information on proposed treatment methodologies as iated with the discharge and dewatering activities are then described in **Section 5**.

4.1.1 Drainage Design Criteria

The Drainage Strategy set out he strategic design criteria that has been incorporated with regards to water management (during both cons ruction and operation). This has been reiterated below to aid with the understanding of the drainage desig principles that were followed to inform the proposed discharge activities.

The below criteria were submitted for approval under specific requirements of the DCO (Requirements 5, 23 and 35) (Section 3.2.0 of the Drainage Strategy[2]):

4.1.1.1 Discharge and Volume criteria

- Drainage fac litie to provide no surface water flooding from a 1 in 30-year return period rainfall event, in accordance with accepted guidelines, combining a range of techniques e.g., infiltration systems, permeable paving, and surface drainage structures to remove water from paved or semi-paved surfaces (e.g., storage areas) with no ponding for a 1 in 30-year rainfall event.
- Store or safely convey the run-off from exceedance storm events greater than the 1 in 30-year return period, without putting public or property at risk.
- Reduce, if possible, or at least not increase, the pre-development risk of flooding.
- Determine the impact and store on site the volume of water generated from a 1 in 100-year plus climate change rainfall event to prevent escape into adjacent areas.
- Water quality criteria

- Remove / treat any contaminants within surface water run-off before discharge.

- Amenity and ecology criteria
  - Provide amenity and ecological enhancement, if practicable.
- Sustainability criteria
  - Protect the environment, minimise the use of finite natural resources and energy and provide value to those involved in its design, construction and operation.

4.1.2 Calculation of Discharge Flow Rates and Volumes and Rainfall Return Periods

The discharge rates applicable to each outlet have been summarised in **Table 3** below:

Table 3 – Calculated Discharge Rates for CWDA90 Out ets

Catchment	Outlet	CWDA90 Proposed Maximum Discharge Rate (l/s)	DCO Maximum Discharge Rate (l/s)[10]	Catchme t Area (ha)	No es
WMZ 1	O1	23.7	19.4	16.03	There has been a reduction in the catchment area since the DCO, but the discharge rate is now calculated from QBAR resulting in a higher discharge rate being proposed.
WMZ 2	O2	27.6	17.4	18.48	There has been an increase in the catchment area since the DCO and the discharge rate is now calculated from QBAR resulting in a higher discharge rate being proposed.
WMZ 3 and WMZ 4	EO3	40.7	5 2	54.33	The catchments have been combined and the area slightly increased due to transfer from WMZ 1 compared to the DCO. Due to concerns of around the impact of a large point flow discharge at EO3 a rate equivalent to 50% of QBAR has been proposed.

Details on the specific treatment trains and pollution prevention measures being incorporated into the proposed discharge activities are set out in **Section 5** further below.

Table 4 below ets out the rainfall return periods that have informed the design of the proposed drainage systems on site.

Table 4 - Surface Water Drainage Parameters

Return Period (years)	Drainage Criteria	Description
1	No surcharging above outlet soffits	The highest probability event to be specifically considered to ensure that flows to the watercourse are tightly controlled for frequent events. This criterion aims to ensure the morphological conditions in the stream remain the same.

[10] DCO Drainage Strategy Annex 2A.5 Tables

Return Period (years)	Drainage Criteria	Description
30	No surface flooding	A useful intermediary event for which to assess on-site system performance, because of its relevance for industry standard design. Surface water will be accommodated within SuDS structures. However, it will be ensured that the surface water level within the structure remains 0.3m below the top of the structure.
100	Controlled flooding to sacrificial external areas	Represents the boundary between high and medium risks of fluvial flooding defined in the National Planning Policy Framework. This limit recognises that it is not practicable to fully limit flows for most exceedance events. Overland flow wi be manage through existing and proposed surface topography to ensur that flo d flows are directed away from critical site infrastruc ure.
>100	Exceedance event	When the capacity of the surf ce wa er drainage network is exceeded, surface water run-off will cumul e on the urface and be removed by overland flow to lower areas

Proposed drainage systems utilising the various SuDS techniques (as d cr ed further below) will be designed to accommodate the predicted flows for all rainfall return periods listed in the above table. Industry standard modelling has been used to assist the design of the Su S method that will be incorporated (alongside any below ground pipework). Following the Flood Studies R port (FSR) method, which used Sizewell, Suffolk, as the location, an M5-60 and 'r' ratio of 18.2 mm and 0.4 r pectively, has been used to predict the various storms in which the drainage infrastructure will be subject to, including varying storm intensities and return periods. Systems simulations have however been onducted using datasets and methodology defined within the Flood Estimation handbook (FEH22 [11]); th is the most up to date methodology, supported by CIRIA SuDS Manual and local guidance.

4.1.3 Attenuation

Proposals for attenuation structure hav been designed to cater for the 100-year critical event, with an additional climate change allowance (a described in **Section 0** below). The rate of discharge to any watercourse will be limited propo ionately to the requirements of the site, as further detailed in the sections below, as appropriate to the exi ting undeveloped conditions. This will be provided through the construction of attenuation basins for storage, combined with the use of suitable flow restrictors (e.g., hydro-brakes or similar). This approach has been ag eed at DCO stage (Section 2.2.16 of Drainage Strategy[2]). Flow control systems will constrain the rate of discharge, and attenuation storage will be employed when the rate of inflow from the storm run-off is g eater than the subgrade infiltration rate or greenfield run-off rate.

4.1.4 SuDS and Inf ltration

SuDS will be de ign d in accordance with the CIRIA SuDS Manual[3] (as described above). To ensure systems readiness to deal ith a rainfall event, any infiltration or discharge rates from the systems will be sufficient so that any attenuation storage becomes half empty within 24 hours. Where practicable, soakaways will be placed to ensure that the seasonally high groundwater table is at least 1 m below the base of the soakaway. Infiltration systems will also be installed a minimum of 5 m away from any foundations or other underground structures.

Sufficient inspection and maintenance will be undertaken during the life of SuDS features, throughout both construction and operation of the development once complete.

11 FEH22 - User Guide

Infiltration is being used where viable across the site. This is in accordance with the SuDS hierarchy highlighted above and is the approach that was submitted, and accepted, at the DCO stage of the site development proposals (Section 2 of the Drainage Strategy[2]).

4.1.5 Climate Change Allowance

The Drainage Strategy for the site has considered for climate change allowance when calculating anticipated discharge volumes and rates (Section 4.1.2 of the Drainage Strategy[2]). The surface water drainage network designed for the works has been designed to retain excess storm water which resu s from a 1 in 100-year return period plus climate change rainfall event within the site with a 45 % allowa ce for the sizing of attenuation basins. This is in accordance with EA guidance (see **Table 5** below).

Table 5 - EA Guidance for Climate Change Allowance[12]

Applies across all of England	Total potential change anticipated for the '2020s' (2015-2039)	Total potent l change anticipated for the '205 ' (2040-2069)	Total potential change anticipated for the '2070s' (2070-2115)
Upper end	10%	45%	40%
Central	5%	20%	20%

4.1.6 Calculation of Discharge Volumes and Flow Rates

SZC have proposed to restrict discharge rates to the greater f 1 l/ /ha or QBAR unless noted otherwise in the following sections, with acknowledgement of he sensitive surrounding environments and following EA guidance for minimum discharge rates (Rainfall R n-o f Man gement for Developments Rev E[4]). It should be noted this is a peak discharge rate and flow r s from frequent rainfall events will likely be lower.

4.2 Receiving Receptors

The DCO Drainage Strategy (refer to **Appendix F**) set out the overall approach toward management of site drainage, with the preferred option b ing to infiltrate to ground (with no treatment / intervening use) where possible to ensure that the surrounding d signated sites and sensitive ecological receptors are not impacted by changing water levels and f ows, f r example within Sizewell Marshes SSSI.

Surface water on the site currentl i filtrates to ground and enters a series of interconnected local ditches and watercourses, some of which are pr posed to receive the treated discharge. The receiving watercourses, being the upstream tributaries of the Leiston Drain and the Leiston Drain itself, fall within the Leiston Beck Water Framework Directive (WFD) waterbody catchment. The area comprises two heavily modified, low energy lowland river systems; the Leiston Drain and Minsmere River. It is noted that none of the discharges covered within this permit application are proposed to enter the Minsmere River. Water levels are regulated within the catchmen area v sluice on the Minsmere River to maintain the ecological balance within the Sizewell Marshes SSSI. S rf ce water levels are strongly influenced by water levels and flows within groundwater systems and furth rmore the groundwater from the underlying aquifer contributes to the water balance of the Marshes.

Leiston Drain is the main receiving watercourse, in that all of the discharge outlets in this application are ultimately proposed to enter this watercourse, albeit via discharge to upstream tributaries as required for O1 and EO3. Flow and water quality in the Leiston Drain is heavily influenced by the discharge of treated effluent from Leiston Sewage Treatment Works.

[12] Climate change allowances for peak rainfall

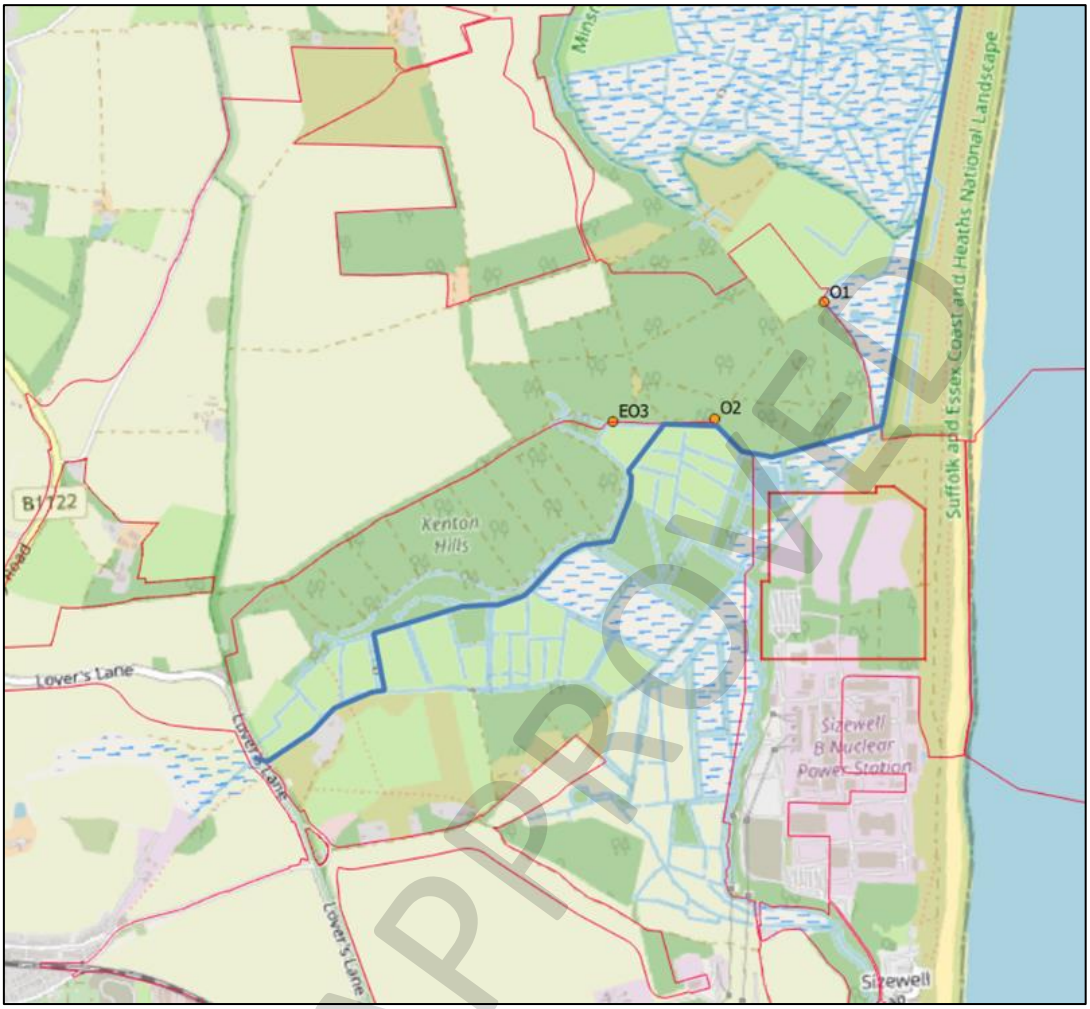

Figure 3 – Source and route of Leiston Drain and relation to outlets

The watercourse arises at Aldhurst arm and then enters the site boundary via a culvert beneath Lovers Lane, where it splits into two channels, one of which becomes a designated main river. From here it runs across the Sizewell Marshes SSSI in a easterly direction before turning northwards running parallel to the MCA and Suffolk coastline up to Minsmere Sluice. The Leiston Drain is a WFD designated waterbody (GB105035046271 – Leiston Beck)

With regards t whether the Leiston Drain described above would have flow all year round, which is a requirement to address in the EA permit application form Part B6 Q2.7[13], please see the comment below:

- The flow in the Leiston Drain is not anticipated to dry up during the year as the flow is primarily made up of surface water runoff and discharges from the Leiston Sewage Treatment Works, which serves the nearby town of Leiston. It is important to note however that the flows in the Leiston Drain are affected by the control of the Minsmere Sluice further downstream, over which SZC do not have any control. This is operated by the relevant regulator based on tidal aspects and flows from other watercourses.

[13] Form EPB: Application for an environmental permit – Part B6 water discharge activity or groundwater (point source) activity, or point source emission to water or sewer from an installation

The risk assessment has been undertaken in accordance with GOV.UK guidance, to consider the potential impacts of the proposed discharge activities on the main receptor outlined above.

4.3 Overview of Proposed Discharging Activities

For each discharge activity being proposed, the following information is provided in this section of the technical supporting document:

- Source and nature of the discharge effluent, including the source ea on site and anticipated commencement of discharge, and
- The proposed drainage and management strategy for each discharge str am.

Table 5 below provides a summary of the proposed discharge act vities hat are subject to this permit application. Each of the sub-sections further below then provides m re de il abou each discharge stream (or activity).

Note that there is no specific order or numbering system appl d to the utlet references in the below table; these are references that have been used throughout the design prog mme for the project. Overall, the outlets included within this permit application are consi ered 'e ly' outlets required for the enabling works (works to construct the longer-term construction areas , however ome may remain in place for the entire duration of the construction period.

When consulting the below table, it is advised tha **App ndix B** is referred to which is a design drawing showing the approximate location of each outlet across th TCA.

Table 6: CWDA-90 Proposed ischarge Activities

Discharge Stream	Discharge Activity Type	Outlet Referen e No. and N tional Grid Referen e Locati n (approxim te)	Receptor	Maximum Discharge Rate (litres / second) and Maximum Discharge Volume (m3 / day)	Summary of Discharge Source
A	1.3.12 – Trade effluent and / or non-sewage effluent discharges to surface water or groundwater with a volume greater than 5m³ a day.	O1 NGR: M 47217 64922	Tributary of Leiston Drain	23.7 l/s 2,048 m³/day (based on maximum 24-hour discharge)	TCA: Discharge of rainfall-dependent surface water run-off from WMZ 1.
B	1.3.12 – Trade effluent and / or non-sewage effluent discharges o sur e water or groundw ter with a volume greater han 5m³ a day.	O2 NGR: TM 46876 64559	Leiston Drain	27.6 l/s 2,385 m³/day (based on maximum 24-hour discharge)	TCA: Discharge of rainfall-dependent surface water run-off from WMZ 2.
C	1.3.12 – Trade effluent and / or non-sewage effluent discharges to surface water or groundwater with a volume greater than 5m³ a day.	EO3 NGR: TM 46556 64549	Tributary of Leiston Drain	40.7 l/s 3,516 m³/day (based on maximum 24-hour discharge)	TCA: Discharge of rainfall-dependent surface water run-off from WMZ 3 and 4.

Figure 4 below gives a generic schematic of the discharge network proposed for the three outlets discussed in this application.

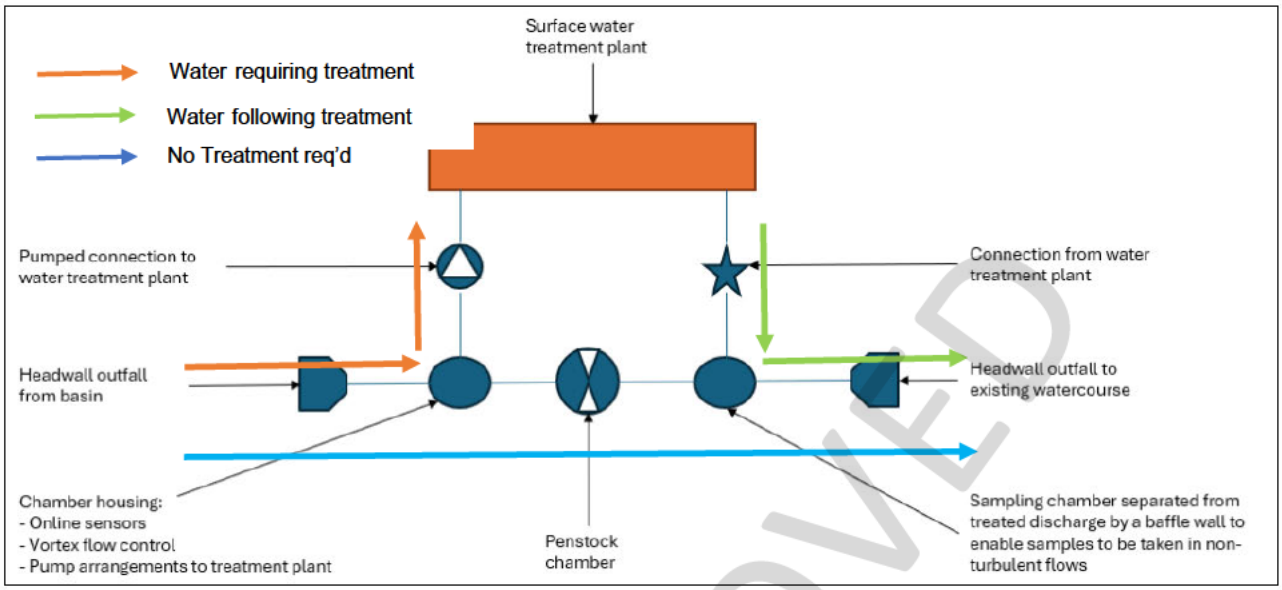

Figure 4 – Schematic of Discharge and Treatment A rangemen for Outlets O1, O2 and EO3

As illustrated in Figure 4, when surface water is o discharge from the WMZ basins, it will be checked via the online monitoring system and in person system agai permitted discharge parameters and conditions. When meeting these parameters, it will be discharged irectly hrough the penstock chamber to the outfall headwall and receiving watercourse. When surface water unoff or discharge is observed via the online monitoring or in person inspections to be outside or above e allowable discharge parameters or conditions, the penstock will be shut to allow the water to be pump d to th surface water treatment plant. When treated to ensure it is off suitable quality to release it wi l be d charged to the proposed outfall position.

4.4 Discharge Stream A – Outlet O1 (TCA)

4.4.1 Effluent Type, Source and Flow ates

The effluent proposed to be discharged at Outlet O1 will comprise rainfall-dependent surface water run-off from WMZ 1. Activities taking place within the TCA will include typical construction activities such as earthworks, transfer and storage of materials, plant and equipment, use of vehicles, storage of street sweepings, waste management and concreting activities. There are no proposed discharges of concrete washout water or ru ff from street sweeping arisings as part of this permit. The surface water run-off proposed to be discharged via the TCA will be treated prior to discharge to ensure potentially elevated levels of suspended soli s and pH (from run-off from areas where concreting might take place) are reduced to appropriate levels if in exceedance of the permitted discharge criteria (see further below). Proposed treatment measures have taken the above factors into account and are described below.

The fuel storage facility located in the catchment for WMZ 1 is yet to be designed however all fuel storage areas will be internally bunded and have integral pollution prevention measures designed to industry standard and WMZ 1 will also be serviced by a class 1 full retention oil separator, suitable for use in refuelling forecourts. Any runoff from hardstand areas and access roads will be passed through suitable pollution control measures

The discharge flow rate from Outlet O1 will be limited to a maximum of 23.7 l/s, using the QBAR greenfield run-off rate as opposed to the assumed value of 1l/s/ha used in the DCO Drainage Strategy which equated to

19.4l/s. It is considered unlikely that this small increase will have adverse downstream implications. The discharge from the TCA will be intermittent, dependent upon rainfall-runoff discharge requirements.

Based upon the maximum flow rate of 23.7 l/s, the maximum volume of discharge that could be discharged from the TCA outlet over a 24-hour period is 2,048 m^3. Flow rate will be controlled through the use of a vortex flow control, such as a Hydrobrake or similar.

4.4.2 Proposed Drainage and Treatment Method

The WMZ 1 surface water drainage system has been split by sub-catchment a shown i **Table 7**.

Table 7: Sub-catchment drainage method

Sub-catchment	Proposed drainage method
Main Access Road (MAR)	Swales
Haul Road	Swales
Service plots	Swales/carrier drains plus oth r on-plot features
Fuel storage facility	Carrier drains

Swale networks are proposed along the MAR and hau road. Networks with a combination of swales and carrier drains are anticipated to be included within the se vice plot ; however, the end-users of the plots may propose integrative SuDS features to deliver the requir d water treatment and improve runoff quality entering the drainage being conveyed to the WMZ basin. he ne rks combine in a buried carrier drain which conveys the run-off to the WMZ 1 basin located in the east o he catchment.

A treatment train flow path diagram for the WMZ 1 catchment and Outlet O1 is shown in **Figure 5**.

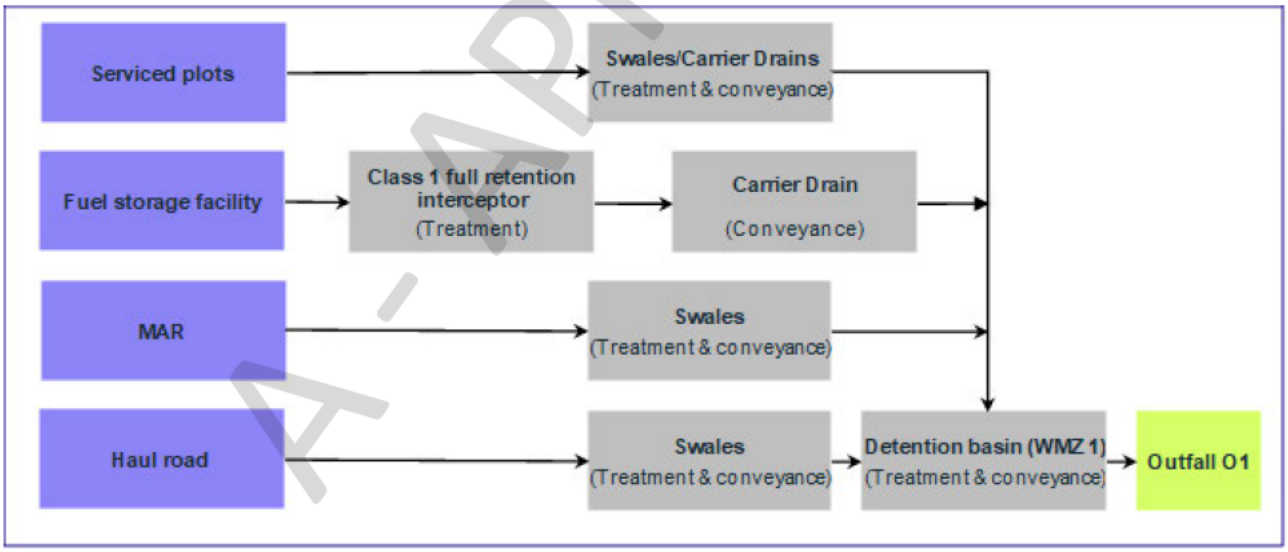

Figure 5 – Outlet O1 Treatment Train Flow Diagram

4.5 Discharge Stream B – Outlet O2 (TCA)

4.5.1 Effluent Type, Source and Flow rates

The effluent proposed to be discharged at Outlet O2 will also comprise rainfall-dependent surface water run-off from WMZ 2, which is located in what part of the TCA. Activities taking place within the MDS will include

typical construction activities including earthworks, transfer and storage of materials, plant and equipment, use of vehicles, waste management and concreting activities. The surface water run-off proposed to be discharged via the TCA will therefore be treated prior to discharge to ensure potentially elevated levels of suspended solids and pH (from run-off from areas where concreting might take place) are reduced.

The discharge flow rate from Outlet O2 will be limited to a maximum of 27.6 l/s., which has been derived using the QBAR greenfield run-off rate as opposed to the assumed value of 1l/s/ha used in the DCO Drainage Strategy which equated to a maximum discharge rate of 17.4l/s. It is considered unlikely that this marginal increase will have adverse downstream implications. The discharge from the TCA will be nterm tent, dependent upon rainfall and runoff conditions and controlled through the use of vortex flow ontrols, su h as a hydrobrake or similar. The flow rate will be controlled from the treatment plant system(s) tha will be incorporated as part of the discharge treatment train.

Based upon the maximum flow rate of 17.4 l/s, the maximum volume o d scharg that could be discharged from the TCA outlet over a 24-hour period is 2,385 m^3.

4.5.2 Proposed Drainage and Treatment Method

The WMZ 2 surface water drainage system has been split by sub atchment as shown in **Table 8**.

Table 8 Sub-Catchment Dr inage Systems

Sub-catchment	Proposed drainag meth d
MAR	Swale
Rail head	Filter dra
Serviced plots	Swale /carrier rains plus other on-plot features
Concrete batching plant (roof and "clean" * hardstanding areas only)	arrie drains
Containment liner prefabrication facili y (considered as a serviced plot)	Additional SuDS treatment components to be included as part of the facility service plot design. Carrier drains

* Uncontaminated areas outsid of the conc ete mixing process and loading areas.

WMZ 2 is made up of a combin tion of networks, including filter drains to serve the railhead, and swales to treat and convey the water from the MAR and serviced plots. The outlet from WMZ 2 will discharge south into the Leiston Drain.

Potentially contaminated su face water run-off from within the concrete mixing process and loading areas will be recycled for use in concrete production and will not enter the surface water drainage network. Run-off from the roofs and uncontaminated hardstanding areas of this facility will be routed through the surface water drainage system. To ount for the scenario where the wedge pits, lagoons and recycling tanks may be full when a heavy ra nfall event occurs, two additional overflow surface water storage tanks have been proposed.

The clean network non-concrete contaminated) is a traditional gravity surface water network which collects runoff from building roofs, roads and hardstanding areas outside the batching area. Runoff collected from roads and hardstanding areas within this network is treated through an oil interceptor prior to discharging into the WMZ 2 basin.

A treatment train flow path diagram for the WMZ 2 catchment and Outlet O2 is shown in **Figure 6**.

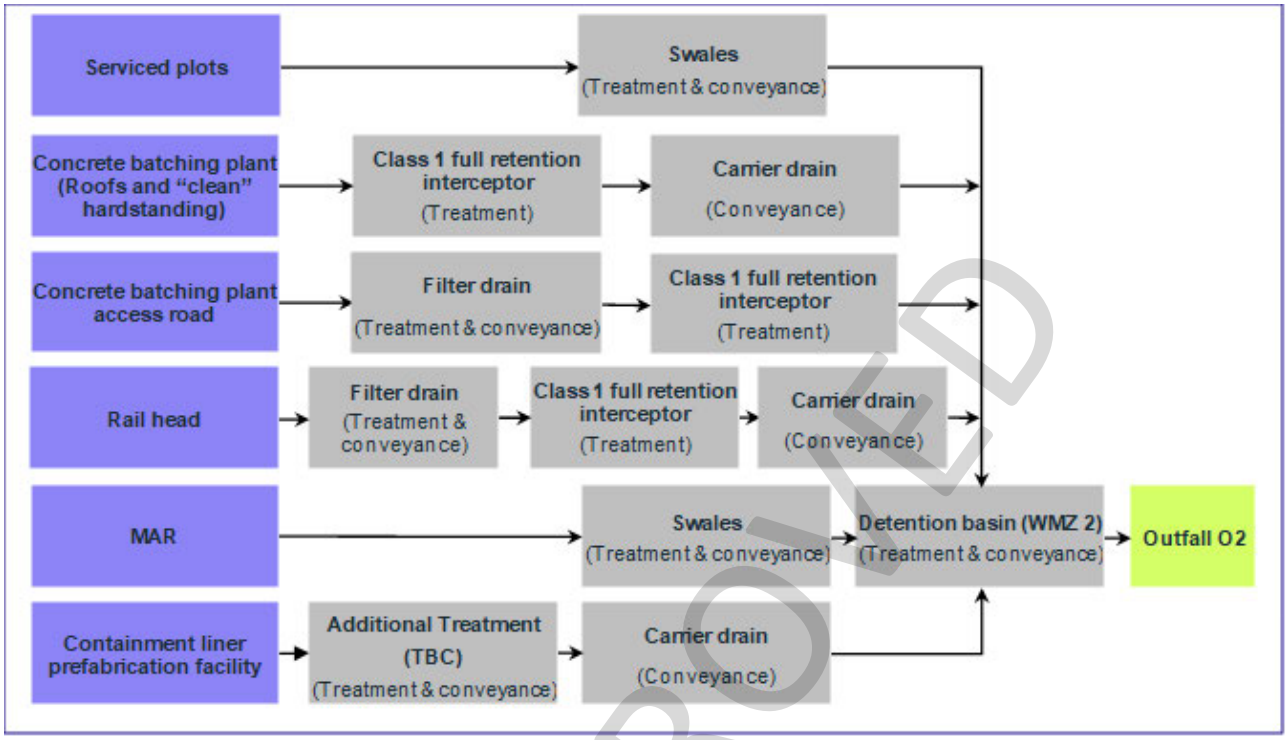

Figure 6 – Outlet O2 Trea me t Train Flow Diagram

4.6 Discharge Stream C – Outlet EO3 (TCA)

4.6.1 Effluent Type, Source and Flow rates

The effluent proposed to be discharg d at Outlet EO3 will comprise rainfall-dependent surface water run-off from WMZ3 and WMZ4 expected to be d rived during construction in this area. Activities taking place within the MDS will include typical constr tion activities such as bulk earthworks, transfer and storage of materials, plant and equipment, use of vehicles waste management and concreting activities. The surface water run-off proposed to be discharged via th TCA will therefore be treated prior to discharge to ensure potentially elevated levels of suspended solids nd pH (from run-off from areas where concreting might take place) are reduced.

The discharge flow rate from Outlet EO3 will be limited to a maximum of 40.7 l/s via a positive outlet to a local watercourse within the Sizewell Marshes SSSI. This flow rate has been calculated based on 50% of the QBAR greenfield run off rat s opposed to the assumed value of 1l/s/ha used in the DCO Drainage Strategy[2]. As the design has evolv d f om the DCO stage, the WMZ 3 and WMZ 4 catchments have been combined to discharge at a single outlet (O3). To limit the potentially negative hydro-geomorphological impacts from having a large point discharge to the Sizewell Marsh, the maximum discharge rate has been limited to 0.75 l/s/ha, which is 50% of the rate applied to other outlets. This results in the run-off from these catchments being discharged to the Sizewell Marshes at a single point, rather than being more distributed. It is not considered appropriate to use the full QBAR rate as this could have adverse hydro-geomorphological consequences within the Sizewell Marshes.

4.6.2 Proposed Drainage and Treatment Method

The proposed drainage system for the catchment area of WMZ 3 Outlet (EO3) shall receive, treat, and store surface water run-off in WMZ 3, prior to discharging at a maximum possible flow rate of 40.7 l/s via a positive outlet to a tributary of the Leiston Drain. It is not considered appropriate to use the full QBAR rate as this could

have adverse hydro-geomorphological consequences within the Sizewell Marshes. The maximum volume that could be discharged in a 24-hour period is 3,516 m³. It should be noted that the reduction in discharge rate below QBAR does not reduce the total volume of water that will be discharged to the Sizewell Marshes, but rather the same volume will be discharged over a longer period of time (50% reduction in flow rate equates to double the time required to discharge waters).

The WMZ 3 surface water drainage system has been split by sub-catchment as shown in **Table 9**.

Table 9 WMZ3 Sub-Catchment Drainage Method

Sub-catchment	Proposed drainage method
MAR	Swales
Haul road	Swales
Material laydown area	Swales
Serviced plots	Swales/carrier drains plus other on-plo features
Rail head	Filter drains

The network comprises drainage within the serviced p ots, which then discharge into the MAR swale. The swales alongside the Haul Road also discharge into the MAR swales o be conveyed towards the WMZ 3 basin. The rail head is drained by filter drains, and run-off will be tr ated by a Class 1 full retention interceptor before reaching WMZ 3.

A flow path diagram for WMZ 3 and EO3 are shown i **Figure 7**.

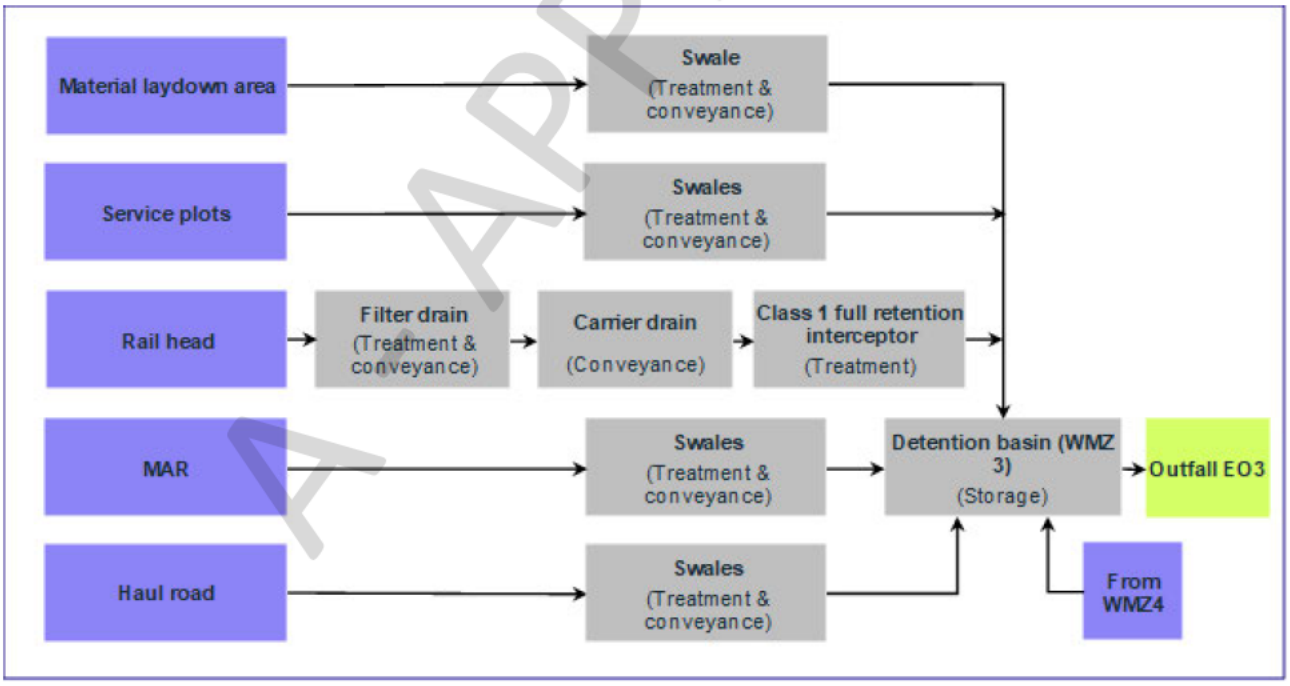

Figure 7 – Outlet EO3 drainage flow diagram

The proposed drainage system for WMZ 4 shall convey, treat, and store surface water run-off. The basin within WMZ 4 will facilitate the disposal of some run-off by infiltration while also having a connection to WMZ 3. Design and environmental ground conditions do not allow for the WMZ 4 basis to fully infiltrate all incoming

flows, hence the need for an overflow to WMZ 3. The water will then be treated prior to discharge from WMZ 3, if necessary (when triggered by an exceedance in discharge quality parameters), before being discharged to a local watercourse within the Sizewell Marshes SSSI.

The WMZ 4 surface water drainage system has been split by sub-catchment as shown in **Table 10**.

Table 10 - WMZ4 sub-catchment drainage method

Sub-catchment	Proposed drainage method
MAR	Swales
Haul road	Swales
Stockpiles	Ditches
Water tankering facility	Filter drains & swales
Emergency overflow of potable water	Swales

Perimeter ditches will be provided around the base of stockpiles. Sw les a e proposed alongside the haul road and MAR. Filter drains and swales will manage run-off from water tankering facility.

A flow path diagram for WMZ 4 is shown in **Figure 8Figu e 8**.

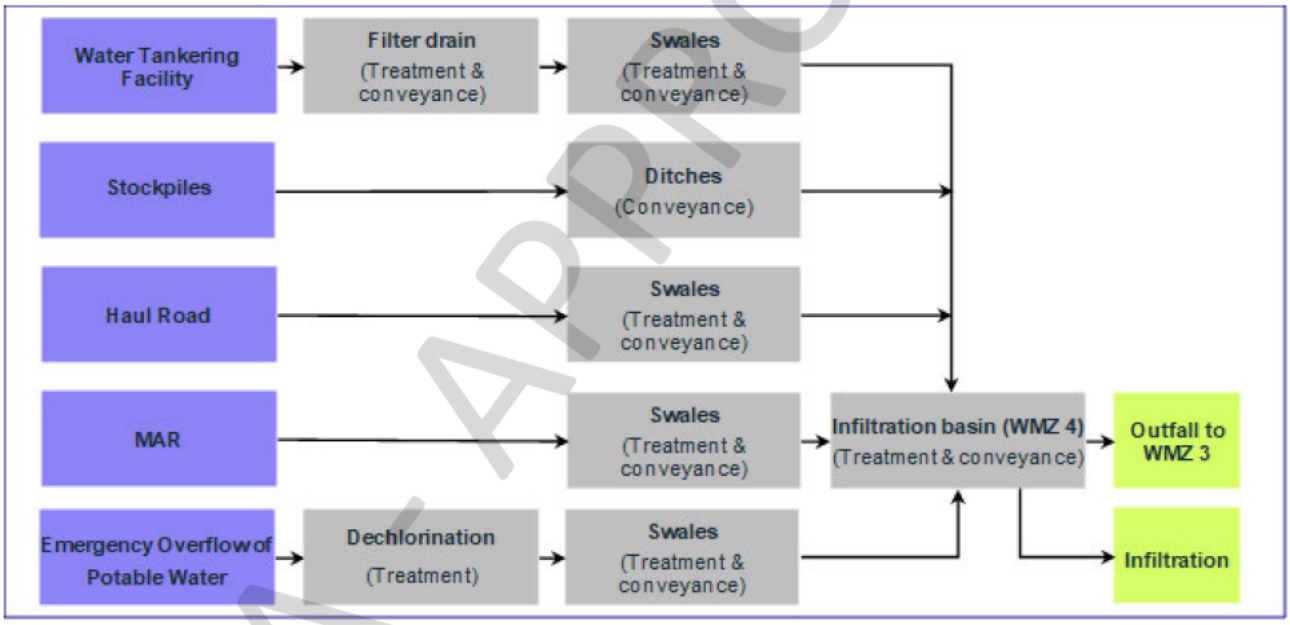

Figure 8 – WMZ4 drainage flow diagram

For the Emergency overflow of potable water, this is an emergency provision that will be required in the even that there is a need for emergency maintenance of the dechlorination tank. This drain down will require discharge of the remnant / dead water stored in the tank to the receiving drainage network. All water will be fully dechlorinated through the use of sodium bisulphate, which will also be totally consumed in the dechlorination process as astatic addition.

The total volume of this drain down is 2 x 250 m^3 = 500 m^3. The total dead storage of these tanks is 175 m^3, meaning that the potential total discharge amount is less than 200 m^3, which will be released slowly into the drainage network Given that this is an emergency management provision, there is not specified frequency for this requirements however it is considered as minimal or negligible in terms of total quantity and possible risk, due to the efficiency of the process and inclusion of other downstream control measures as described in this

document. Potable water entering the dechlorination tank does not contain contaminants that require further treatment

4.7 Approximate Discharge Duration

It is anticipated that discharging from the TCA will be required to take place from October 2025 (at the earliest). It is expected that all three outlets will be used throughout the construction phase of the TCA. The discharges via these outlets from the TCA will be intermittent as they will be rainfall-runoff dependent. The overall anticipated discharging operational duration from Outlets O1, O2 and EO3 are cu ently expected to be required approximately 11 years (until 2036). This will be dependent upon the seque cing of the planned construction works and programmed commissioning of final drainage and outlets for the Sizewell project area. The EA will be kept updated of any changes to the planned discharge d rations.

The below table summarises the key requirements as per GOV.UK application form Part B6:

Table 11 - Discharge Stream Quantities for All Outlets

Outlet	Maximum Discharge Volume (m3/day)	Maximum Discharge Flow Rate (l/s)	Anticipated Discharge Start Date:	Anticipated Discharge Duration
O1	2,048 (over 24 hours duration)	23.7	October 2025	11 years (132 months)
O2	2,385 (over 24 hours duration)	27.6	October 2025	11 years (132 months)
EO3	3,516 (over 24 hours duration)	40.7	October 2025	1 years (132 months)

5 SUPPORTING RISK ASSESSMENT

5.1 Summary of Supporting Assessment Undertaken

The following best practice guidance was consulted to support this section of the permit application:

- GOV.UK guidance Risk assessments for your environmental permit[9]
- GOV.UK guidance Surface water pollution risk assessment for your en ironm ntal permit[10]

The risk assessments have been undertaken to assist in the delivery permit pplicatio and environmental assessment of the construction phases. These risk assessments are prov ded as Appendices to this supporting technical document. Please see the below list of supporting assessmen s:

- Appendix F – Qualitative Environmental Risk Assessment
- Appendix H – Surface Water Baselining Assessment

Each of the above are summarised in the sections further below; howe , it is intended that this section of the document is read in conjunction with the relevant supporting Appendix.

A qualitative Environmental Risk Assessment (ERA) for a bespoke pe mit application to consider the proposed discharge from a source-pathway-receptor approach, in accord nce with the GOV.UK guidance for Risk Assessments for your Environmental Permit[2] has been undertaken to support the permit application for the proposed discharge from areas WMZ 1 to 4. Ref r to **App dix F** for the qualitative ERA, complete with any further relevant supporting documentation These s ould be read in conjunction with this main technical supporting document.

For any outlets where dosing of coagulants / f occulants might be undertaken for treatment purposes (for example where sediment treatment systems are eing used), we have not undertaken a specific substances Surface Water Pollution Risk Assess ent a there is not expected to be any carry over of chemicals present in the discharge streams. When introduc d into the water on a flow proportional basis at the optimum pH, virtually all the coagulant (ex le: Ferric Chloride) forms an insoluble hydroxide, which is bound up within the settled/floated suspended solids. s a esult, virtually all the added chemicals are removed with the settled solids. The concentrations of thes chemicals in the solids are, however, very low, and consequently are unlikely to change the waste classifi ation of the settled/floated solids.

A HRA and CRoW assessmen will also be submitted as part of this permit in relation to the proposed discharge activities. Therefore, as agreed with the EA as part of wider project requirements, relevant background information has been collated in an 'information package' in **Appendix I** to help inform these assessments. These will be pro ided to the EA for determination in parallel with this permit application.

5.2 Surface Wate Baselining Assessment Outcomes

In terms of existing background water quality, or baseline conditions, these are heavily influenced by the inflow of saline water at Minsmere Sluice and from the baseline flow in Leiston Drain, which is characterised largely by the flow received from the Leiston Sewage Treatment Works. The watercourses have been described within the Surface Water chapters provided as part of the DCO submission stage (referenced in **Section 2** above), as generally very low energy flows and near vertical banks. Generally, they are heavily vegetated, and the substrate is largely obscured. The substrate typically consists of fine sediments (silts) when it flows over the peat and coarser gravel when flows run over the Crag bedrock. The surface water features within the area of the site are prone to sediment deposition and transportation (when flows have sufficient energy). Surface water and groundwater levels are closely interconnected and recharge on one another during dry and wet periods. These factors have been taken into consideration during the proposal of, what are considered to be,

appropriate water quality parameters for the discharging activities and also the above-described treatment methods.

5.2.1 Purpose and Scope of Assessment

An assessment of the surface water baseline conditions at the site has been undertaken to support the proposed pollution control and treatment methods (as outlined above in **Section 4**) and the discharge effluent quality management and monitoring requirements (as outlined above in **Section 6**) associated with the proposed discharge streams identified within this permit application.

The Surface Water Baselining Assessment has enabled limiting values for the discharge f surface water run-off to be proposed for inclusion within the permit. The full assessment h s been p ovid d to the EA as part of the permit Pre-Application stage and is appended to this document i **Appendix H**. The below bullet points have been included to provide an overview of the scope of the asse sment a d the key outcomes and conclusions with regards to the proposed water quality parameters nd limi a sociated with the discharge streams detailed within this application. Final limits will be set by the permit.

- A long-term surface water, groundwater and gas monitoring ar n ement has been in place at the site of the site since 2013 to help set a baseline in terms of su face water, groundwater and gas conditions. The data collated by this monitoring and samp ng programme has been used to inform the Surface Water Baselining Assessment completed as part f this permit application.
- The surface water dataset is for 7 moni oring points across the Sizewell Belts (Sizewell Drain) and Leiston Drain between November 201 and un 2022. Refer to Figure 9 below which shows the location of the monitoring locations These re representative of the receiving watercourses for the proposed discharging locations contained within this permit application for the majority of discharge streams.
- The assessment also include the 2019 Cy le 2 WFD classifications for Leiston Beck (aka Leiston Drain) Water Body (sourced from the EA 2021 Catchment Data Explorer – Leiston Beck Water Body[14]) and derivation of WFD specific scre ing criteria for selected determinands. Surface water samples were screened against fresh ater Environmental Quality Standards (EQS). The assessment summarised any exceedances of releva t EQS and WFD criteria for the receiving waterbodies. Note that the surface water monitoring points n luded in the assessment are upstream of any tidal effects and therefore it was not necessary to scree data against coastal and estuarine EQS.
- The scope of works included presentation of mean and Q95 flow calculations using surface water flow data from the baseline monitoring programme.
- Data was collected on the following:
    - Wa er quality indicators, including pH, electrical conductivity, biochemical oxygen demand BOD), chemical oxygen demand (COD), suspended solids (SS) at 105°c, alkalinity (total)
    - Nutrients, including chloride, ammonium, nitrite, nitrate, phosphate, phosphorus (total), sulphate, total oxidised nitrogen, sodium, dissolved organic carbon, total organic carbon,
    - Dissolved metals including chromium (hexavalent), chromium (trivalent), arsenic, boron, cadmium, chromium, copper, manganese, nickel, lead, zinc, iron, phosphorus, calcium, potassium, magnesium, and mercury (low level) and

[14] https://environment.data.gov.uk/catchment-planning/WaterBody/GB105035046271

- Total metals including arsenic, boron, cadmium, chromium, copper, iron, manganese, nickel, lead, zinc.

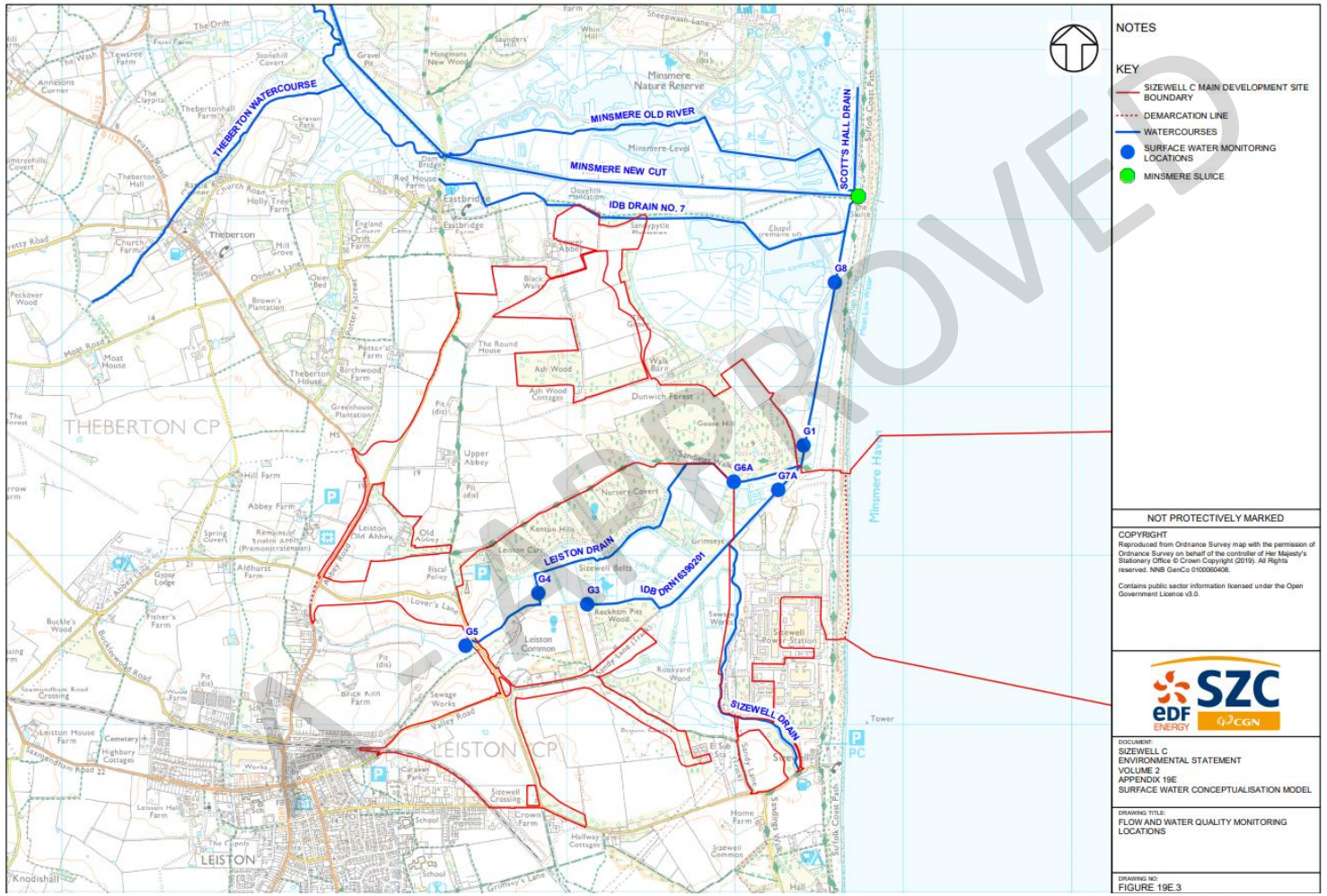

Figure 9 – Location of Baselining Assessment Monitoring Points

5.2.2 Summary of Key Outcomes from Surface Water Baselining Assessment

The below bullet points summarise the key outcomes and findings from the Surface Water Baselining Assessment:

- Results for pH within the baseline dataset ranged between 7.2 and 9.2. Only one of pH measurement was out of the range of the freshwater operational EQS.
- Baseline data for SS indicated a wide range of values (<5 mg/l to 2,300 m /l). Most results were less than 60 mg/l. Higher values were much less frequent. The higher SS that was i entified were likely to be associated with episodes of higher rainfall and are not considered to be repr sentative of general conditions within the surface water network.
- Most dissolved Polycyclic Aromatic Hydrocarbons (PAHs), phe olics BTEX (benzene, toluene, xylene and ethylbenzene), Polychlorinated Biphenyl (PCBs) and other volatile or semi volatile organic concentrations recorded were below the laboratory limit f detect on. This range of potential contaminants also principally relate to abstraction and dewatering of groundwater and have therefore largely been disregarded for further consideration.
- Limiting values have been proposed based on he outcomes of the assessment for pH, suspended solids and visible oil and grease (see **Section 6.1** below Limits have been proposed for these parameters only as these are typically contaminan which may be associated with construction works and surface water run-off. There may be othe aspects affecting the baseline conditions, for instance discharge from the Leiston Sewage Tre tmen W ks upstream, however these are not associated with the proposed discharge activities an will therefore not be monitored as part of on-site management measures.

5.3 Qualitative Environmental Risk Assessment for Bespoke Application

In accordance with risk assessme ts fo your environmental permit guidance (GOV.UK guidance Risk assessments for your environmental permit[15]) a qualitative ERA has been developed to support this bespoke permit application. This has c n idered the proposed construction and associated discharge activities within the scope of the permit application (as described in **Section 3** above). It has also considered the proposed treatment for the discharge strea s, including the use of chemical dosing to help reduce levels of suspended solids.

In particular, the bespoke ERA has considered:

- Risks from the discharge activities (note that wider site-specific risks to the environment from cons uction activities, beyond discharging, will be addressed by appointed contractor's management systems),
- Nearby r ceptors (including people, animals, property and anything else that could be affected by identified hazards),
- Possible pathways from the hazards to the receptors (in accordance with source-pathway-receptor methodology),
- The likelihood of the receptor being exposed to the hazard and anticipated consequence, and the subsequent magnitude of risk, and

[15] Risk assessments for your environmental permit - GOV.UK

- Mitigation or control measures that will be in place to reduce the level of risk.

The approach undertaken to support the ERA is explained further below. The bespoke ERA is attached to this supporting document as **Appendix F**.

5.3.1 Qualitative Environmental Risk Assessment Approach

The approach undertaken for the risk assessment comprised the following stages:

1. Identify which outlet included within the scope of this permit applicati n the hazard identified relates to. OR Identification of the hazards (defined as the activity or event wit potential to cause environmental risk) which might be posed by the proposed discharge a tivities)
2. Identification of the main receptor/s. As the scope of the ERA is the proposed water discharging activities ultimately feeding to the Leiston Drain, the receptors a e mainly the receiving watercourses however other receptors have been included where relevan
3. Identification of the pathways or routes by which the hazar might come into contact with the receptor.
4. Summarise the potential harm that could be caused shou d contact occur.
5. Undertake impact assessment through consider tion of the probability of exposure (likelihood of the risk occurring, hazard coming into contact with the rece tor), the level of harm (consequence) that could occur and the subsequent magnitude o the risk (harm that could be caused). The below sub-paragraphs explain the ratings used in the impact assessment.
6. Description of expected control or mitig tion m asures that may be implemented to reduce the risk, noting that final control measures re sti subject to design and construction sequencing finalisation.
7. Residual impact (after mitiga ion measu s have been implemented).

The criteria used for the impact asses men as part of the ERA is defined in **Table 12** below. The nature of these assessments, being qualitative, is that the are subjective, and the methodology and criteria used to complete the ERA can therefore vary. The c i eria developed and applied to this ERA has been based on the professional judgement and expertise of the SZC permitting team responsible for this application.

Table 12 - Qualitative ERA Impact Assessment Criteria

Impact Assessment Rating	Criteria
Probability of Exposure	***Defined as the likelihood of the receptor(s) being exposed to the hazard.***
High	Exposure is probable. Direct exposure likely with no distance or barriers (e.g., physical features) between hazard source and receptor.
Medium	Exposure is possible. Barriers to exposure are less controllable.
Low	Exposure is unlikely. Several barriers exist between hazard s urce and receptors to mitigate against exposure.
Very Low	Exposure is very unlikely. There are effective, multiple ba iers in pla e to mitigate against exposure.
Consequence	***Potential level of harm that could be caused to the eceptors if exp sed to the hazard.***
High	Consequences are likely to be long-lasting and / or aff a large area or number of receptors. Effects require intervention to address and are di ficult to r ve se.
Medium	Consequences are likely to be medium-duration and / or affect a considerable sized area or number of receptors. Effects require interv tion to a dress but are reversible.
Low	Consequences are short-term durations and unlikely impact a considerable sized area or number of receptors. Requires some level of ntervention to address.
Very Low	Consequences are minimal in terms of duration nd have limited lasting effects. Requires little to no intervention to address.
Magnitude of Risk	***Determined by combining the prob bility o exposure with the level of the potential consequences – refer the be ow Magnitude Rating Grid Box. The below explanations provide a summary of what the magnitud means from a practical perspective. These very much depend on the hazard and risk dentified.***
High	Identified risks will re uir stringen monitoring and formal methods of recording / reporting. Reportable to exter al stakeholders (e.g., regulators).
Medium	Identified risks requir s me level of regular monitoring and recording / reporting. Not necessarily rep ble to e ernal stakeholders.
Low	Identified ris s requi e some level of monitoring / checking but this is not necessarily reportable / recorded.
Very Low	Identified risks req ire minimal monitoring / checking.

The below grid box (**Table 13**) summarises how the overall magnitude has been determined for each identified hazard and risk within the qualita ve ERA. Note that the ERA methodology has been developed using a professional and subjective opinion; it is therefore open to some element of interpretation. However, the overall purpose of the ERA is to identify the key risks from the proposed discharge activities, in accordance with Source-Pathway-Receptor methodology, and outline what control measures will therefore be implemented reduce the overall level of risk.

Table 13 - Qual ative ERA Magnitude Rating

Probability of Exposu e (below) / Consequence (right)	High	Medium	Low	Very Low
High	High	High	Medium	Medium
Medium	High	Medium	Medium	Low
Low	Medium	Medium	Low	Low
Very Low	Medium	Low	Low	Very Low

6 MONITORING AND SAMPLING ARRANGEMENTS

Water quality monitoring and / or sampling requirements for the proposed discharge activities set out in this permit application will ultimately be dependent upon any specific conditions and requirements within the permit. This section of the technical supporting document provides an overview of the proposed minimum sampling arrangements that will be implemented once the discharge activities commence. Note that, once contractors are appointed for the scheme, they may advise that alternative arran ements are implemented, e.g., due to site-specific characteristics and conditions. It is therefore proposed tha a final sampling and monitoring programme is developed once the permit conditions are known nd contractors are appointed. This will be subject to review by the relevant site personnel to ensure any requirement set out in the permit will be sufficiently met. It is acknowledged that the programme may b requi ed to be submitted to the EA as well prior to any discharge activities commencing.

Monitoring / sampling arrangements will be implemented in accordan e with the principles outlined in the EA guidance listed below:

- Developing a management system (2016)[5]
- Monitoring discharges to water: environmental permits (published 11 June 2020[16])
- Site-specific quality numeric permit limits: discha es to su face water and groundwater[17]

For the purposes of this technical supporting document, the term 'monitoring' is considered to represent methods of either visual or continuous monitoring of the discharge effluent. 'Sampling' is considered to then represent where physical samples of the di arge e fluent are obtained, e.g., grab samples, and are then either tested on-site or off-site at a UKAS ccredi ed laboratory (subject to permit requirements).

Any requirements set out in the permit will be ransferred into pertinent construction-related environmental management practices and documentation and communicated to relevant on-site personnel. Contractor-specific arrangements, in conjunction with SZC Integrated Management System (IMS) requirements, will ensure effective arrangements are in plac to monitor the discharge.

6.1 Proposed Water Quality (Discharge Effluent) Parameters

6.1.1 Proposed Final Effluent Quality

In terms of the discharge effluent quality, the below table outlines the proposed parameters and limits anticipated to be implemented for the discharge streams included within the scope of this permit application (applicable to outlets O1, O2 and EO3 following the treatment as described previously within this technical supporting do ument

[16] Environment Agency (2020) Monitoring discharges to water: environmental permits [Last updated 24/11/2022] (Available online)
[17] Site-specific quality numeric permit limits: discharges to surface water and groundwater - GOV.UK

Table 14 - Proposed Water Quality Parameters

Parameter	Limit	Reference Period
Visible oils and grease	No significant trace present so far as is reasonably practicable	Instantaneous (visual inspection)
Suspended solids (measured after drying at 105°c)	40 mg/l	Instantaneous (spot sample) (maximum allowable concentration)
pH	pH between 6-9	Instantaneous (spot sample)
Total Iron as Fe*	1000 µg/l	Instantan u (spot sample)

*If additional treatment is required that could involve the dosing of iron (e.g., ferric c loride) as a occulant, it is acknowledged that a limit of 1000 µg/l is likely to be set in the permit. It is recognised th t, depen ng on the treatment chemicals used, a limit may also be set on aluminium. Safety data sheets will be rovided if is d termined (once contractors are appointed) that such treatment is required.

These limits are considered appropriate to the proposed discharge e fluent s urces across the TCA (subject to this application) based on the nature of the construction activities taking place and therefore the potential contaminants that could arise. In line with the GOV.UK guidanc n site-specific quality limits[17], it is expected that the above will be set as maximum compliance limits. As stated above however, the final effluent quality is anticipated to be set out in the environmental permit alongside monitoring / sampling requirements and frequencies.

6.2 Discharge Flow Rates and Flow Control Monitoring

The anticipated discharge maximum flow rates and da ly discharge volumes are presented in **Section 4** above. It is expected that, based on these, there may be a limit set on the maximum flow rate of the discharge (l/s) from each outlet. Discharge flow rates will be con rolled using suitable flow control methods and / or devices. The rate of flow may be controlled for example through measures such as includes vortex flow control, such as Hydrobrake or other similar suppli rs (where t e size of the infrastructure will limit the volume and rate of effluent to be discharged).

Section 4 has also provided the maximum possible discharge volumes based on the flow rates. As described in **Section 4**, these volumes are he aximum daily discharge volumes that could be experienced, however they are rainfall-dependent and ther fore could be much less in some cases.

Design for the system has undertaken to incorporate continuous flow meters immediately adjacent to the outlet sample chamber. This is considered to be in accordance with the (now withdrawn) ***EA guidance EPR 7.01 How to comply with your environmental permit: Additional guidance for water discharge and groundwater***[18]. Based on this guidance (which is yet to be fully replaced by current GOV.UK guidance), Section 2.4.3.2 (which sets out thresholds for flows requiring flow monitoring) states in relation to rainwater runoff and rainfall dr ven d harges from trade effluent:

'*Where flow rate depend primarily on rainfall intensity there is limited regulatory value in continuous flow measurement. We may require temporary flow measurement for regulation and treatment design. This must be justified for each case*'.

On this premise, and in conjunction with the fact that there are not anticipated to be any concentrations of dangerous or priority substances added to / or present in the discharge from construction activities, it is not anticipated that continuous flow monitoring will be required. However, it is acknowledged that the EA will assess each water discharge activity on a case-by-case basis. If continuous flow meters are required to be installed, these may be required to meet the EA Monitoring Certification Scheme (MCERTS) requirements for

[18] PART 1 – proposed split for publishing as separate parts of same document

flow meter specification (as set out in the Minimum Requirements for the Self-Monitoring of Effluent Flow'[19] guidance).

Any specific requirements relating to continuous flow monitoring and MCERTS are expected to be detailed in the environmental permit (if granted). Arrangements will then be made on site to ensure that monitoring and sampling requirements can be complied with. Where sediment treatment systems are in use, for example to aid treatment of suspended solids, these may contain live flow monitoring equipment (such as telemetry equipment and high-level alarms) which would enable the flow to be recorded and logged as required. Note however that such systems may not be required to be implemented at all outlets inc ded within this permit application. In addition, weather conditions will be monitored on site periodi ally, particu arly rainfall intensity, which will have a direct effect on the flow rates and treatment requirements.

6.3 Proposed Sampling Locations and Frequency

It is being proposed that all the discharges from the WMZs will be monitored co tinuously for TSS and pH. TSS treatment measures installed at all three locations and left in situ and a tomatically turned on in response to online monitoring, if there is a potential exceedance in terms of para te conditions set within the permit.

In addition to any continuous monitoring (if taking plac), it is a ticipated that periodic instantaneous spot samples will be required where discharge activities are aking plac based on typical environmental permit requirements for this type of construction-related dischar e. The p rameters suggested to be subject to spot sampling are identified in Table 14 above. Visual nsp ctions of the surface water drainage network (where accessible) will also take place, in particular to dentif ny issues associated with hydrocarbons (oil / fuel) which may leave visible sheens for example. Specific monitoring and sampling arrangements will ultimately be dependent upon the substances which ar req ired to be monitored, and any other conditions set in the environmental permit. As described above it is anticipated that this will include (but may not be limited too) TSS, pH and oil / grease (visible).

Sampling points will be established n all th ee outlets after final treatment systems and prior to the discharge entering the Leiston Drain to enable epresentative sample to be obtained. With regards to where the samples will be obtained from the design of the discharge arrangements will include for the provision of suitable sampling locations. Ac ess to sampling points will be provided in accordance with relevant safety considerations. These will be mai tained as necessary. Accessibility issues will need to be taken into consideration. The expected samp ng point locations, at the time of writing, are set out in **Table 15** below. These may be subject to change slightly however as final surface water drainage network design is still in development at the time o writing this application. Therefore, based on advice received during the pre-application stage from the EA, we understand that it is possible that a Pre-Operational Condition may be included in the environmental permit which would likely require that the exact monitoring and sampling locations are confirm d 1-3 months prior to discharging activities commencing on site. This could require SZC to submit for approval a monitoring plan detailing the monitoring regime and accreditation methods to be used for monitoring an sampling of discharging and dewatering activities on site prior to discharging activities commencing.

[19] Minimum requirements for self-monitoring of flow: MCERTS performance standard - GOV.UK (www.gov.uk)

Table 15 – Estimated Spot Sampling Point Locations

Discharge Stream	Outlet Reference	Monitoring and Sampling Location NGR	Receptor
A	O1	TM 47183 64952	Tributary of Leiston Drain
B	O2	TM 46886 64581	Leiston Drain
C	EO3	TM 46362 64613	ibutary of Leiston Drain

Any changes to proposed sampling locations will be communicated to th EA an samp ing requirements will all be captured in relevant construction-related environmental manag ment documentation and procedures (e.g., work instructions or similar) to ensure site personnel are aware.

The frequency of any monitoring / sampling required in relation o the p posed discharge activities is anticipated to be set out in the environmental permit, however for the purposes of the permit application it is proposed that a standardised weekly period is established for in-pe n monitoring of basins and discharge points. SZC initially propose to undertake spot samples of the ab ve parameters on at least a weekly basis as a minimum. If site activities and / or weather conditions a e such tha the discharge activities could be affected (for example, during periods of prolonged or intense rai fall), this f equency can be revisited and potentially increased (as and when identified as being required) Duri g su h periods, more direct instances of in-situ monitoring may be required so that reactions to alter he management of the discharging activities are swift and effective (in this case, site operatives can take di idual grab samples to test turbidity and pH for example and manage as necessary to avoid having to w it for w ekly sample results to come back).

Regular (minimum weekly) visual checks of the conditions in the WMZ attenuation basins, and other surface water network drainage features, will be under ken to compliment weekly spot samples. Weekly visual checks of the upstream / downstream watercourse, where accessible, may also be undertaken. These measures will help ensure that any potential issues elat d to the discharge activities is identified and addressed quickly.

As highlighted above, where sediment t atment systems are used, these may incorporate telemetry equipment which would allow live m itoring of the discharge in accordance with the objective permit parameter conditions. This will improve real-time control of the water treatment processes and allow operatives to ensure discharge s eams are in compliance with any set discharging criteria. Telemetry monitoring at the outlet of such systems may be implemented for parameters such as total suspended solids and pH for example.

If samples are required to be taken off-site for external laboratory analysis and testing, it is expected that the frequency an y additional requirements in relation to this will be set out within the environmental permit. Consideration of this has een included however in the paragraphs further below.

Any additional mo itoring and sampling requirements, including reporting arrangements, for example if there is a need to test for substances without emissions limits based on background water and groundwater conditions or due to the proposed use of dosing equipment, will be agreed with the EA (to inform the basis of permit conditions).

6.4 Sampling Methods

Sampling methods to be used on site are expected to be in accordance with the British Standard for Water Quality Sampling (BS EN ISO5667:2006); however, this will ultimately be dependent on conditions set in the permit. It is anticipated that samples will be collected in either glass, plastic or stainless-steel containers. Sampling vessels will be thoroughly cleaned between sample collection and care will be taken not to disturb any bed sediments in the area of collection. Each sample will be appropriately labelled, sealed and stored in a

refrigerated cool box immediately for transportation to the testing facility. For each collected sample a sampling report may be completed, if required.

Monitoring and sampling of discharge outlets is anticipated to be undertaken by either SZC Ltd Site Operations or appointed contractors. Where contractors are required to undertake monitoring and sampling activities, SZC will ensure that they hold the relevant experience and competencies to undertake the monitoring and sampling in accordance with the environmental permit conditions. Final arrangements will be detailed in a monitoring plan, if required. Aspects of self-monitoring will be covered as required in the SZC EMS documentation and / or contractor construction related environmental manag ment rrangements.

6.4.1 Testing and Quality Assurance

Testing will be conducted such that all parameters under the permit co dition are measured. The monitoring and measurement methods to be used will be agreed with the EA, where r uired. In-situ water quality testing may be required, for example using handheld electronic meters and field tes ki s. These may form a routine part of weekly (or other routine timeframe deemed suffice for th permit) monitoring assessments if considered necessary (for example in relation to elevated suspend d solid concentrations).

Analytical testing suites for water quality will be dependent on c nditions included within the environmental permit. The basic suite of parameters that may need to be analysed within a laboratory for collected water samples might include pH, suspended solids, aluminium (total) (if dosing). Tests may be required for other parameters dependent upon site conditions or reg l tory req i ments. The need for, and arrangements to undertake if required, analytical testing will ther fore be determined following permit issue.

As described above, sampling and testing is anticipated to be carried out in line with British Standard for Water Quality Sampling (BS EN ISO 5667:2006) It wi also b conducted under a safe system of work and in accordance with any laboratory quality assu ance procedures. Testing will be undertaken at a UKAS accredited facility and will meet any MCERTS requi ments if needed). All sampling and monitoring equipment is likely to be subject to a programme of preve tive m intenance. Records of all maintenance and calibration will be kept secure and made available to regulato s a and when required.

6.5 Reporting of Monitoring and Sampling Results

Results from the water quality mo itoring and sampling will be made available as required to environmental regulators, e.g., the EA, upon reques or in line with reporting requirements set out in the environmental permit for the proposed discharging activities. These will be managed by the site compliance team. Any non-conformances will be addressed as per internal EMS arrangements. Corrective actions and the implementation of a solution to ensure that the discharge remains in-specification will be agreed with in conjunction with the advice of the A where required.

7 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) ARRANGEMENTS

7.1 Environmental Management System Summary

SZC has an Environmental Management System (EMS) that is certified to the BS EN ISO 14001:2015 management system standard. It is part of the wider Integrated Management System (IMS). The IMS forms a key pillar to SZC's environmental compliance model, alongside Leadership & Go ance, Competency and Training.

The EMS provides a structured system of procedures, arrangements and ssociated pro esses and tools to ensure suitable and effective management of SZC's environmental aspe ts an impacts. The scope of the EMS includes planning, design, construction, future operation and d comm ssioning of the SZC nuclear power station. It includes approaches to training, competency requirements, m agement structure and emergency response. Relevant aspects of the EMS will be applied to the ermitted activities proposed in this application as appropriate, in conjunction with any contractor implemented management system measures which are aligned to SZC's EMS and are reviewed and pproved by the Site Environment and Sustainability Team. Where new processes or procedures are identified as being required, for example in relation to specific requirements or conditions that may be imposed s part of an environmental permit, these will be developed by either SZC Ltd or the appointed c ntrac or(s) and communicated to all relevant personnel.

There is an EMS Manual in place which summ ises, in detail, the processes and procedures (and associated documentation), that constitute the fu EMS, and how these ensure the organisation meets the relevant clauses set out in the 14001 EMS sta da d.

The SZC IMS Structure is presented elow and the EMS is integrated at each level.

Figure 10 – SZC IMS Stru ure

7.2 Construction Environmental Management Approach

There will be a requirement to ensu e that he proposed activities set out within this application are undertaken in accordance with suitable management measures in place. Responsibilities for permit condition compliance are outlined in written arrangements between appointed contractor(s) and SZC. SZC Ltd will act as the Legal Operator and will t erefo e h ve overall control of the activities.

Relevant documents, such as the fo lowing, may be produced to show how SZC and its contractor(s) will manage and control construction rel ted activities:

- **Construction Environmental Management Plan (CEMP):** The appointed contractor, those responsible for undertaking the construction works and any associated permitted activities will be required to prod and adhere to a CEMP which incorporates permit conditions as appropriate. The CEMP will be submitte by the contractor, prior to work commencing, for review and approval by competent SZC perso nel. The CEMP shall act as a live document and be reviewed periodically and updated as necessary during the execution of the works. The bespoke Environmental Risk Assessment (ERA) produced as part of this permit application may be used to cross-check and / or help to inform key contractor considerations on-site.
- **Compliance Matrix:** A permit-specific compliance matrix will be developed which outlines responsible persons for each permit condition and the arrangements that support compliance.
- **Other Contractor Management Plans, Procedures and Method Statements:** Other documents may be prepared as necessary to deliver environmental control, for example, contractor and sub-contractor Risk Assessment and Method Statement (RAMS) and Safe Systems of Works.

- **Any other relevant plans/monitoring and sampling records as identified under the EMS or bespoke documentation identified from the permit.**

7.3 Organisation

7.3.1 Management Structure

The details of SZC Ltd.'s overarching leadership and governance structure are presented in its Company Manual. The importance of environmental leadership has been embedded at all levels of the SZC project and its EMS, with ultimate accountability sitting with the Board of Directors. Roles and responsibilities specifically in relation to environmental management are set out in the EMS Manual

SZC Ltd's core environmental capability is embedded throughout all levels of the project:

- Contractors and sub-contractors working on SZC's behalf have a responsibility for ensuring their works are carried out in accordance with environmental requirements
- The SZC Delivery team, which consists of Project Managers and Construction Managers, have a responsibility to oversee the works and ensure that they are carried out in an environmentally compliant manner.
- The SZC Site Environment and Sustainability team have a responsibility to inspect the works, review environmental deliverables and ensure that the works are carried out in compliance with the permitted activities.
- The SZC Environmental Services and Assurance Function will provide assurance of the activities as part of their assurance programme.
- Independent Nuclear Assurance provide independent, objective assurance on environmental activities.

7.3.2 Training and Competency

For construction activities to be undertaken, multiple forms of training will be deployed by competent instructors and records of all training attended will be maintained. The primary objective of this training shall be to ensure that environmental protection is implemented across the site, delivered to off-site and on-site operatives. Training and competency may include:

- **Toolbox talks:** to be delivered as considered appropriate to relevant personal on a regular basis. These are expected to inform site personal of relevant environmental requirements relating to the permit as well as general on-site environmental considerations and topics such as Pollution Prevention and Waste Management.
- **Pollution prevention / spill training:** Emergency spill response training will be delivered. Spill response training will involve appropriate use of spill kits and equipment and the steps to follow during an emergency spill response. It will also set out key roles and responsibilities.
- **Site induction programmes:** Inductions will be provided by SZC and contractors. Part of the induction programme will cover environmental sensitivities and requirements/conditions of any permits, licences and consents.
- **Environmental awareness training:** all site personnel will have or are due to participate in a Site Environmental Awareness Training Course which includes the Code of Construction Practice (CoCP) and environmental sensitivities of the site. This will ensure a basic awareness level of environmental issues.

- **Bespoke training relevant to the permit as deemed appropriate.**

Additionally, the project has established an 'environmental baseline' which identifies all the posts within the SZC organisation that are considered competent from an environmental perspective, via the use of Role Training Profiles.

7.3.3 Environmental Emergency Response

The EMS Manual states how environmental emergency preparedness and response is to be embedded into the project.

There is an Environmental Emergency Preparedness and Response standard whi h speci es best practice to be used by SZC to ensure readiness for dealing with any accident or em rgency arisin on the site. Alongside the standard sits the Establish, Maintain and Develop Emergency Prepa dn ss and Response procedure which provide a strategic approach for deploying the organisation's Emergency Preparedness and Response policy.

A contractor's CEMP shall include an environmental incident response pro edure or plan. A draft of the CEMP will be subject to SZC approval prior to any construction works ommencing on site. This will be required to have taken into consideration the proposed activities se out within this permit application.

7.4 Specific CWDA EMS Arrangements

The EA guidance 'Develop a management system: nvironm tal permits'[20], does not specify that a standalone water discharge activity is required to demonstrate ow it will meet all of the below EMS requirements at permit application stage, however the following i formation is hoped to demonstrate where considerations in accordance with this guidance have still bee made as part of the project as best practice.

7.4.1 Site Infrastructure Plan

Relevant project design diagrams and drawings have been included as **Appendix B - H** to this permit application. Additional site la t drawings and construction plot plans may be developed and be available (upon request) at a later date a the TCA p ogramme continues.

7.4.2 Site Operations

The contractors appointed to manage the TCA will be required to implement control measures and procedures as appropriate to ensure the TCA and associated discharge activities does not impact adversely upon the environment. Contractors will work in accordance with the Sizewell C EMS procedures set out in **Section 7.2** and will produce elevant documents in **Section 7.3**. Permit-specific requirements will be communicated through the pe mit handover process.

The site will be su ject to regular environmental auditing by the SZC Environmental Services and Assurance Team, as well as project-wide ISO 14001 surveillance and re-accreditation audits, carried out by an external company. Activities relating to the proposed water discharge activity will be incorporated into the scope of these audits were considered necessary.

[20] Environment Agency (2016) Develop a management system: environmental permits - GOV.UK (www.gov.uk) [Last updated 03/04/2023] (Available online)

7.4.3 Site and Equipment Maintenance Plan

Operation and maintenance activities are anticipated to be relatively minimal once the TCA outlets set out in this permit have been commissioned and are in operation. However, the site drainage (SuDS) features that are to be implemented across the site will be subject to periodic maintenance as required. For example, this will include silt removal from SuDS systems and visual inspection of WMZ basins and associated features. Any treatment plants used will also be subject to regular inspection and maintenance as necessary. Operation and maintenance of the treatment systems has been considered in the environmental risk assessment produced to support this permit application. Any faulty or defected systems will be replace as soon as practically possible. It will be the responsibility of the SZC Environment and Susta nability Te m and construction contractors (once appointed) to determine a suitable routine inspection regime w ich will incorporate consideration of the drainage system and discharging activity aspects.

7.4.4 Monitoring

Monitoring and/or sampling will be undertaken in accordance with any set environmental permit conditions. These are anticipated to set out the type, method and frequency of monit ring required along with parameter limits, as explained in **Section 6** above.

If the sampling or monitoring results/inspections indic te an issu with the discharge, the activity will be stopped at the earliest opportunity (as soon as identified and as soon as safe to do so), and the surface water run-off will either be collected and removed off-sit (g., via kering) or held in the respective WMZ basins, until the issue has been resolved. Further sampl ng may be undertaken where considered necessary prior to discharge operations re-commencing to be absolut ly certain the discharge is not resulting in pollution to the receiving environment.

7.4.5 Contingency Plans

The relevant contractors should have a f ll contingency plan in place which will be signed off by the SZC Environment and Sustainability team. Some contingencies, however, can be found in **Appendix F**.

7.4.6 Accident Prevention and Manag ment Plan

As set out in **Section 7.3.3**, there is an environmental emergency preparedness and response is to be embedded into the project and will be implemented within this activity.

7.4.7 A Changing Climate

Although the outlets referenced here are a temporary feature of the project, climate related risks have been considered i h design of the WMZ basins and use of other SuDS features (e.g. rainfall return period modelling to f rm f owrates and discharge volumes). Possible climate related risks which could impact proposed dischar activities have also bene considered in the supporting and environmental risk assessment (**Appendix F**). Furthermore, the SZC CoCP sets out a requirement that CEMPs must consider measures to manage extreme weather events which may be derived from a changing climate.

More generally, the wider project has been subject to a climate change assessment as part of the DCO requirements. This is publicly available information if further information is required in relation to this.

From a corporate level perspective, the organisation has committed to making a substantial positive contribution across a range of environmental, social and governance aspects through the project. This incorporates SZC's 'Net Zero Excellence' approach which, as well as helping to deliver net zero for the UK in the most cost-effective and reliable way possible, is also about creating net positive outcomes against a number of the United Nations Sustainable Development Goals.

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7.4.8 Complaints Procedure

There is an established complaints handling process in place as part of the wider SZC project; this will apply to any complaints which might be received in relation to the proposed discharge activity. Complaints, and the process to address these, are managed by the SCZ Communications team. Timelines for acknowledging and addressing complaints with the public are also set out in the SZC Deed of Obligation.

7.4.9 Keeping Records

Pre-existing document control procedures will apply to all documentation and records r quired to be retained by SZC in relation to the proposed discharge activity, for example permit mon oring records.

Documents are maintained within Teamcenter across the project which ensures eve y document uploaded to the system is allocated a specific reference number and retains review, ppr val and version history.

7.4.10 EMS Review Arrangements

There is an Environmental Management Review Terms of Refer ce pro edure in place as part of the EMS. This sets out the EMS review process that is to be undertak including who needs to be involved and how often reviews should be conducted.

In terms of the permit application development and rev w process that has been undertaken, this technical supporting document has been subject to a Permit Project lan s part of the internal development process for the application itself. This forms part of the SZC Ltd MS and is a requirement for all permits, consents and licences to follow.

This technical supporting document has be n subject to i ternal review processes to ensure that the relevant personnel (from an organisational perspec ive) h ve input or reviewed the document as required, depending on their specific role and responsibilities within he wider project framework.

7.4.11 Site Closure

All outlets in this application a e temporary nd will be removed from the relevant TCA in a safe manner. Once the TCA is no longer required to supp wider site activities then it is expected the outlets will no longer be required and may be decommiss on d.

The permit will be surrendered upon cessation of the proposed discharge activities within this application.

8 CONCLUDING REMARKS

This document has been produced to support the environmental permit application that is being made by SZC Ltd for the proposed water discharge activities associated with the use of three surface water outlets (O1, O2 and EO3) located within the TCA. These outlets are to be provided for surface water drainage outfalls to support the construction phase of the SZC project, within the TCA. It has been prepared with input and review from all relevant technical disciplines.

This document will be submitted to the EA, alongside the required GOV.UK permit a plication forms, and should be used during the regulatory determination process only.