



## Wylfa Decommissioning Site

### Waste Programme

### Non-Active Clearance Facility Development Proposal




### **WYA/29639/Report/007, Issue 02**

**Title: Surface Water Drainage Strategy**

**Project: Z29639**

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**DOCUMENT HISTORY SHEET**

| Issue/Date  | Comment   | Produced By   | Verified By  | Verified By               | Approved By   |
|---|---|---|--|---------------------------|---|
| 02<br>09/07/24  | Minor amendments to label facility more accurately as "Non-Active Clearance Facility" | Author  | Verifier   | QA Review (if applicable) | Approver  |
|   |   | <b>Print Name</b><br>L Roberts  | A Roberts  |                           | G LI Jones  |
|   | <b>Sign and Date</b>  | <br>09/07/24 | <br>09/07/2024 |                           | <br>11/07/24 |
| <i>QA review mandatory for Quality Grade 1 and 2 in compliance with S-046</i> |   |   |  |                           |   |

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## 1. INTRODUCTION

It is proposed to construct a new non-active clearance facility at the former power station at Wylfa Nuclear Licenced Site.

**Site Address:**  
**Nuclear Restoration Services (NRS)**  
**Wylfa Site**  
**Cemaes Bay**  
**Anglesey**  
**LL67 0DH**

Wylfa is a twin civil nuclear reactor site that ceased electricity generation in December 2015. Following the permanent shutdown of both reactors, the site has fully defueled, and decommissioning activities are in progress to transition the site into what is known as 'Care & Maintenance (C&M)', where the site will be made safe and placed in a quiescent state for a period of up to 80 years, prior to final site clearance. The C&M preparations phase will include a multitude of work packages to systematically decommission, and remove, the plant and buildings associated with electricity generation at the site. C&M Preparations is the first phase of decommissioning which is expected to take a further 14 years (approx.), with the site entering C&M circa 2037. During this phase most of the radioactive and non-radioactive plant and buildings on the site will be dismantled and cleared.

With the planned decommissioning, and removal, of such a large quantity of buildings and redundant plant, there is a requirement for the site to demonstrate, and ensure, the compliant management and handling of all non-active material for removal from radiologically controlled areas. To enable the site to achieve this, temporary facilities will need to be constructed, which includes the construction of a dedicated non-active clearance facility (NACF).

## 2. EXISTING SITE BASELINE

### 2.1 Site Boundaries

The proposed development is to be at Wylfa site within the nuclear licensed site boundary. Wylfa is located in the northwest of Wales, on the northern tip of the Isle of Anglesey between Cemlyn Bay and Cemaes Bay. The site lies approximately 2 km west of Cemaes village and 27 km northeast of the town of Holyhead. The nuclear licensed site at Wylfa covers approximately 21 hectares.

### 2.2 Existing & Nearby Watercourses

Wylfa site is located on the Wylfa head coastline, to the North of which is the Irish sea. No other natural watercourses or bodies are in the locality of the Wylfa site.

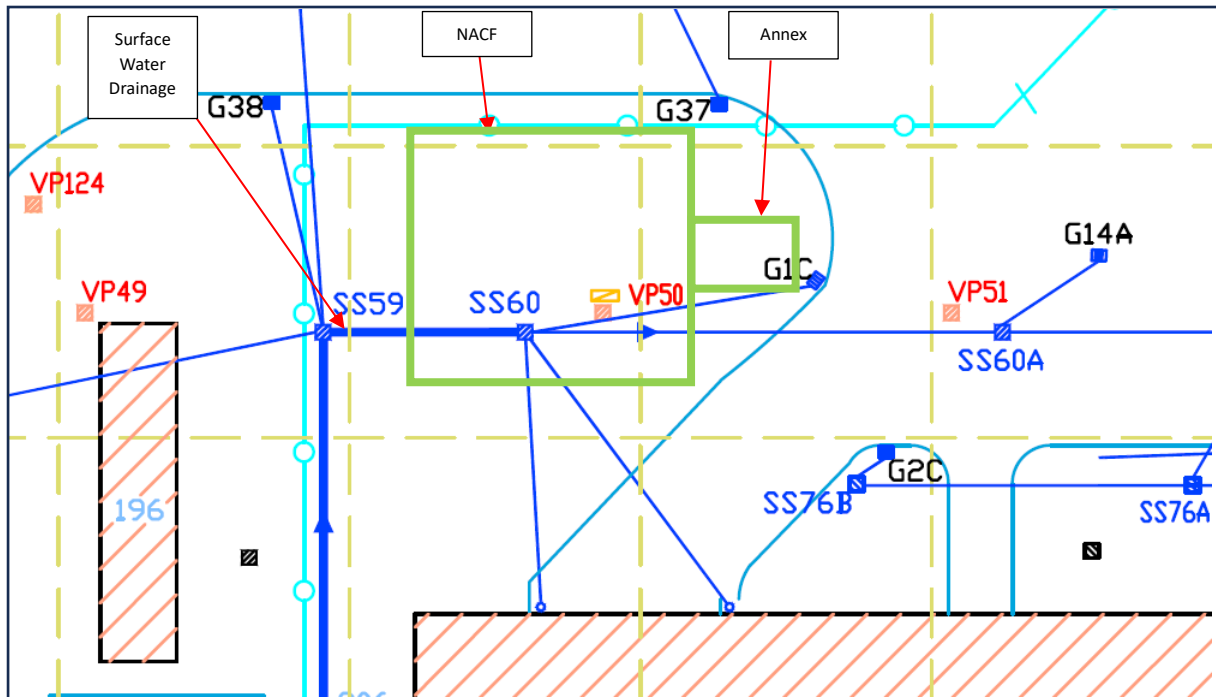
### 2.3 Flood Risk Assessment

Wylfa is a developed industrial site, with its own private surface water drainage system. There is no history of flooding within the nuclear licensed site boundary. Additionally, with reference to Natural Resources Wales's Development Advice Map, Wylfa site lies within flood zone A and, therefore, considered to be at little or no risk of fluvial or coastal/tidal flooding. Subsequently, for this development proposal, no further assessment into the potential risk of



### 3.2 Position

The diagram below, shows the facility footprint (not to scale) measuring 15m x 13.6m, and a small annex measuring 6m x 5m, in its proposed position within the MCA. The proposed area of construction, currently used as a storage / laydown area, is partially hardstanding (i.e. concrete and/or tarmac), and a partially gravelled area. Note the facility will sit directly above a section of the existing site surface water drainage system, indicated by the blue lines, a section which includes main drainage chamber SS60 and road gully G1C, with main chambers SS59 and SS60A in close proximity;



## 4. EXISTING & PROPOSED DRAINAGE

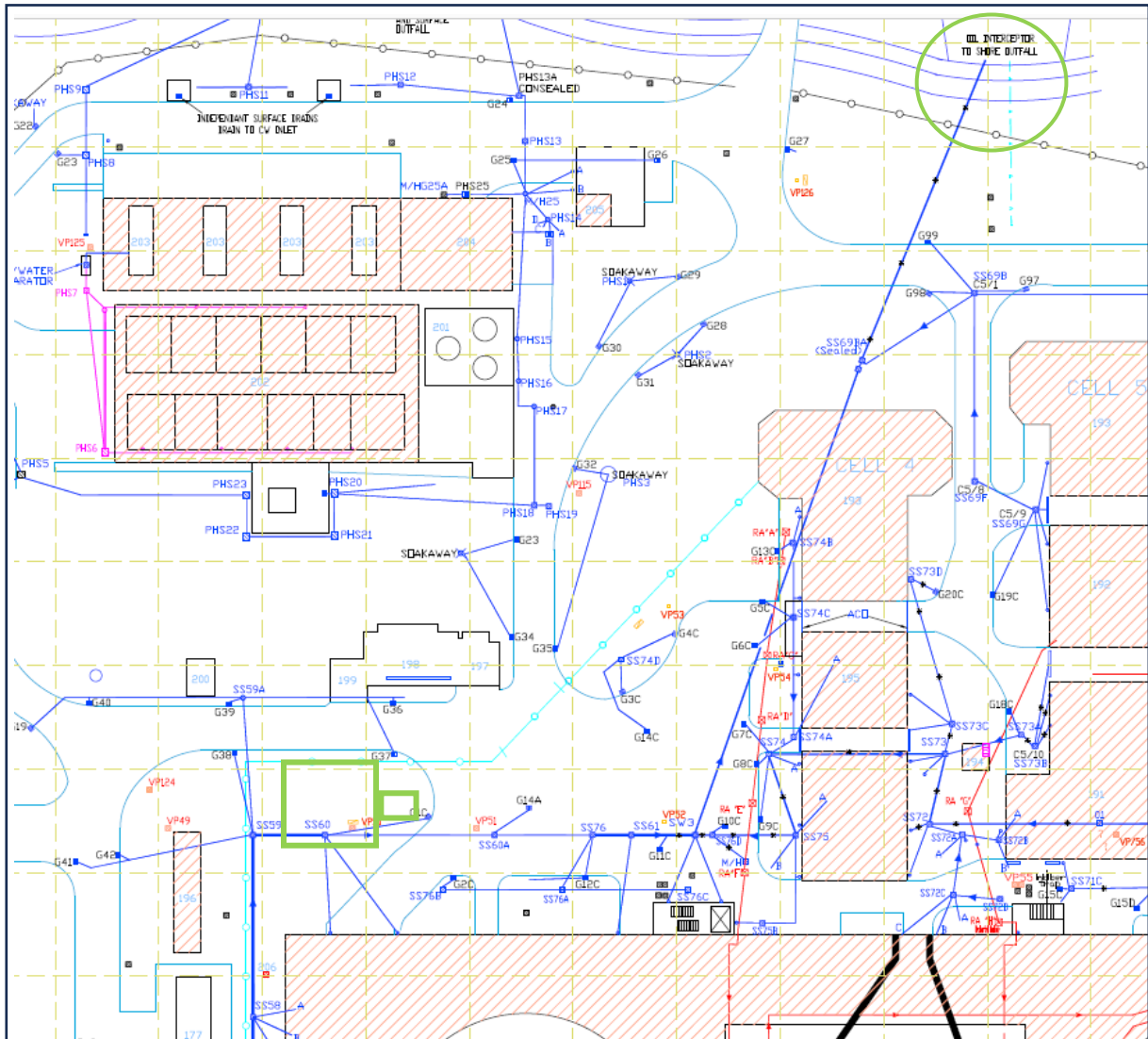
### 4.1 Existing Drainage

Wylfa site has its own private surface water drainage system serving all areas of the site. The system is made up of standard cast concrete road gullies, manholes, and associated pipework, all of which are routed to the shore outfalls which discharge directly to sea under gravity. Water is treated via silt traps and oil interceptors, incorporated into the surface water drainage system, prior to discharge via the shore outfalls.

### 4.2 Proposed Drainage

With the site now in its decommissioning phase, focus will be on the removal of legacy plant items and redundant buildings, disposing of all non-reusable items via the appropriate waste route (i.e. via the existing “hazardous & conventional waste facility” on site). The NACF will effectively be a temporary installation to radiologically clear material for removal from controlled areas for the duration of the C&M preparations phase (currently scheduled for completion circa 2037). The intention is for the building water run-off and drainage system to

tie directly into the existing site surface water drainage system, which in turn discharges to sea via an oil interceptor. The drawing extract below shows the facility in its proposed location, along with a wider view of the surface water drainage system where the discharge to sea can be seen (highlighted with a green circle). Note the proposed facility could tie into several underground drainage pipes, however, it is proposed that downpipes installed along the East and West elevation of the main facility will connect to underground drain pipes which will tie in at SS59, and downpipes along the East and West elevation of the annex will connect to underground drain pipes which will tie in at SS60A;



For information, access to SS60 will be maintained with an inspection chamber cover incorporated into the facility's new reinforced concrete foundation slab.

### 4.3 System Maintenance

Wylfa site has an established schedule of inspection and maintenance routines to ensure the site surface water drainage system is functioning as required (refer to section 5.4). The drainage system for the NACF will be added to this existing schedule.

## 5. SURFACE WATER STRATEGY

### 5.1 Guiding Principles

In accordance with the SuDS Manual 2015, surface water should be managed and discharged from a new development in line with the following hierarchy:

- *Priority Level 1* - Re-use of water;
- *Priority Level 2* - Infiltration into ground;
- *Priority Level 3* - Discharge to a water body;
- *Priority Level 4* - Discharge to a surface water run-off drain;
- *Priority Level 5* - Discharge to a combined surface water run-off and foul drain.

The disposal of surface water for the NACF development has been designed in accordance with the provision of the NPPF, the Flood and Water Management Act 2010 and other best practice documents, such as CIRIA C753 'SuDS Manual' 2015.

The proposed drainage arrangements for the NACF comply with Priority Level 3, as per standard S1; Surface Water Run-off Destination, of the "Statutory National Standards for Sustainable Drainage Systems for Wales". Section 5.2 of this report outlines why complying with Priority Levels 1 and 2 is not considered practical, but does meet the requirements for Priority Level 3.

### 5.2 Surface Water Discharge

Priority Level 1 is not practical as rainwater harvesting is not preferable for the NACF development. There will be no demand for rainwater harvesting within the facility itself, as no water systems will be present within. Rainwater harvesting for use elsewhere on site would not be a cost effective or viable operation as harvested rainwater would require transport to an alternative location on site for use (e.g. contained in IBC's and transported via forklift truck, or pumping, etc). Additionally, the facility will be located within a controlled area, therefore, rainwater harvesting in this location would not be preferable.

The geology of Wylfa site comprises mainly of shallow bedrock overlaid by made ground to provide a baseline level across site, the proposed location of the NACF is no exception. Clear open, or green, space is very limited across site, with the majority of the surface area being hard standing which diverts surface water to the private drainage system. Additionally, it is preferable for water run-off from operational facilities to be diverted to the site surface water drainage system where possible to ensure the water is treated effectively (via the silt traps, oil interceptors, etc), and discharged compliantly via the recognised discharge routes to sea. For these reasons, Priority Level 2 is also not considered practical.

Connecting the NACF drainage system to the site surface water drainage system is the preferable solution, ensuring the proposal achieves priority level 3 with discharge to a water body. This allows Wylfa site to maintain a level of control of surface water drainage and management, and maintain the established arrangements for compliant discharges to sea via recognised shore outfalls, in line with the site's environmental permit. This approach is also consistent with advice provided by the Local Authority regarding the construction of another new facility at Wylfa Site (SuDS application ref. YM2024SAB203), where a pragmatic solution incorporating the existing private drainage system (and recognising the industrial nature of the site) was recommended.



### 5.3 Hydraulic Control

It is not considered necessary to demonstrate hydraulic control given that the proposed drainage arrangements will connect directly to the existing surface water drainage system on site which discharges to the Irish sea. The system will connect to pipework draining directly to SS59 and SS60A which incorporate drainage pipes of circa 380mm diameter, increasing to 900mm diameter for the main discharge leg to sea.

Given Wylfa Site's history as an operational nuclear power station, the site surface water drainage system was designed to exceed requirements to cope with a 100 year rainfall event, ensuring nuclear and public safety. Additionally, the drainage system was designed to cope with water run-off from a greater number of buildings than the site now has, with multiple buildings removed over the years, thus effectively freeing up the available drainage capacity within the system. The new NACF development is, therefore, unlikely to overwhelm the system and cause a surcharge during periods of heavy rainfall.

### 5.4 Water Quality

The NACF development consists of the construction of a re-used portal frame structure clad in an engineered tensioned fabric. The facility is classed as a commercial / industrial facility. Referencing the SuDS manual 2015, and table 26.2 "*Pollution hazard indices for different land use classifications*", the proposal would be classified as "*other roofs (typically commercial / industrial roofs)*". Using table 26.3 (of the SuDS manual 2015) "*Indicative SuDS mitigation indices for discharges to surface waters*", the mitigation for commercial / industrial roofs is achieved with the utilisation of filter drains. The NACF drainage system will incorporate silt / filter traps prior to the connection point to the site's private surface water drainage system. Additionally, the private surface water drainage system also incorporates silt traps and oil interceptors prior to discharge to sea. Therefore, the two systems combined can be considered adequate mitigation for the NACF development.

The following has been taken from tables 26.2 and 26.3 of the SuDS manual 2015;

| <b>table 26.2 "<i>Pollution hazard indices for different land use classifications</i>"</b>      |                               |                               |  |                     |
|---|-------------------------------|-------------------------------|--|---------------------|
| <i>Land use</i>   | <i>Pollution hazard level</i> | <i>Total suspended solids</i> | <i>Metals</i>  | <i>Hydrocarbons</i> |
| Other roofs (typically commercial / industrial roofs)   | Low                           | 0.3                           | 0.2 (up to 0.8 where there is potential for metals to leach from the roof) | 0.05                |
| <b>table 26.3 "<i>Indicative SuDS mitigation indices for discharges to surface waters</i>",</b> |                               |                               |  |                     |
| <b>Mitigation Indices</b>   |                               |                               |  |                     |
| <i>Type of SuDS component</i>   | <i>TSS</i>                    | <i>Metals</i>                 | <i>Hydrocarbons</i>  |                     |
| Filter drain  | 0.4*                          | 0.4                           | 0.5  |                     |

\*Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and maintenance plan.

With reference to the consideration for a potential increase in metal pollutants (table 26.2), the NACF will be clad in an engineered tensioned fabric and not metal cladding, therefore, the risk of metal leaching from the roof is negligible.

### 5.5 Construction, Operation & Maintenance

With reference to the need for maintenance to be considered for filter drainage (table 26.3 from the SuDS Manual 2015), the private surface water drainage system at Wylfa has an established inspection and maintenance regime in place. The NACF drainage system will be added to this inspection and maintenance regime, and will undergo periodic inspection and/or maintenance (as required) as per the scheduled frequency.

An overview of the existing inspection and maintenance regime can be seen in the table below;

| SuDS Component                         | Maintenance Schedule | Required Action  | Typical Frequency |
|--|----------------------|--|-------------------|
| General surface water drainage network | Monitoring           | CCTV drainage inspection of site surface water drainage system | 5 yearly          |
| Silt traps                             | Monitoring           | Inspect silt traps for debris build up                         | Annually          |
|  | Reactive maintenance | Clean out silt trap of any debris build up                     | When required     |
| Oil interceptors                       | Monitoring           | Check oil interceptor levels                                   | Annually          |
|  | Routine Maintenance  | Pump out oil interceptor if required                           | 2 yearly          |
|  | Routine Maintenance  | De-sludge oil interceptor                                      | 5 yearly          |

During construction of the NACF, the newly installed drainage system will tie into the existing system and be routed to SS59 and SS60A. During the works, mitigation measures will be put in place (e.g. installation of sedimentary drain filters and/or silt traps within adjacent road gully's and main drains), to ensure no silt or debris enters the drainage network.

### 5.6 Amenity & Biodiversity

A previous discussion between the local authority and another project currently in progress on site (EOS project, SuDS application ref. YM2024SAB203), concluded that with the industrial nature of the site and the typical activities associated with decommissioning works, it is considered impractical to introduce any new amenity and biodiversity features as part of the proposal.

The proposed NACF is similar to the EOS project in that it will be constructed on an existing hardstanding area upon which modular buildings had once been located. When the modular buildings were removed, the area was used to locate various plant items, including large industrial chiller units. Since their removal, the area is primarily used as a storage and laydown area. By utilising this location, the limited green space on site will remain unaffected by the NACF proposal, meaning any impact on amenity and biodiversity will be negligible.

## **6. SUMMARY & CONCLUSION**

This reports outlines the drainage strategy for the proposed NACF development at Wylfa Decommissioning site.

With sustainability in mind, the proposal seeks to re-use a redundant portal frame structure and re-locate it to a new position within the Wylfa nuclear licensed site boundary. The facility will be a temporary fixture, with its operational life expected to end circa 2037.

All water run-off and surface water generated by the NACF will be adequately treated prior to discharge as the drainage system will incorporate silt / filter traps, and tie directly into the site's private surface water drainage system, which discharges to the Irish sea via a series of silt traps and oil interceptors.