Construction & Demolition Environmental Management Plan

TRAWS-23-042, Issue 1, February 2024

Magnox Trawsfynydd

DEMOLITION OF THE ABOVE GROUND PONDS COMPLEX STRUCTURES; THE PERMANENT RETENTION OF BELOW-GROUND RADIOACTIVELY CONTAMINATED STRUCTURES AND OF DEMOLITION ARISINGS (INCLUDING RADIOACTIVELY CONTAMINATED DEMOLITION WASTE) EMPLACED IN BELOW GROUND VOIDS; AND RELATED CAPPING AND DRAINAGE WORKS

Trawsfynydd Nuclear Power Station, Blaenau Ffestiniog, LL41 4DT

	Name	**Signature / Date**
Project Manager	**Nigel Wright**	**20/02/24**
Lead reviewer / verifier	**Sion Richards**	**19/02/2024**
E-SQEP acceptance	**Eurwyn Owen**	26/2/24

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1 INTRODUCTION

The Trawsfynydd ponds complex is a collection of 36 buildings, some including below ground voids. The following works are proposed:

- Demolition of the above ground buildings and structures of the ponds complex and disposal of the suitable demolition arisings within the ponds complex below ground voids; and
- Construction of a concrete cap over much of the ponds complex footprint, with associated drainage.

Note that this document does not address in detail the environmental controls relating to compliance with the radiological aspects of the site environmental permit.

2 CONTACTS

The Applicant can be contacted via:
enquiries@magnoxsites.com
Tel: 01453 812882
These are central contact points for the Applicant.

The site security guard force can also be informed (in person at the site gatehouse or on 01766 543210), who would then inform the person responsible for instigating an investigation and who will contact the relevant environment and/or safety department managers.

Were a person to be concerned with the Applicant, then they should contact Natural Resource Wales as the regulator responsible for environmental protection (Natural Resources Wales / Contact us).

3 WORKING HOURS

The working hours are:

- Monday – Friday: 08:00 – 18:00hrs
- Saturday: 08:00 – 13:00hrs
- Sunday: No works permitted.

4 LAYDOWN AREA, ACCESS ROUTES AND PARKING

The site compound / laydown area for plant, equipment and demolition arisings awaiting processing is shown in Figure 1. The site access route and vehicle parking are shown in Figure 2.

5 ENVIRONMENTAL IMPACT MITIGATIONS

Mitigation measures are provided in the table in Appendix A.

6 ENVIRONMENTAL MONITORING DURING THE WORKS

6.1 Groundwater and Drainage System

Monitoring of groundwater and the drainage systems will be carried out during the works. This works phase monitoring is summarised in Appendix B.

6.2 Dust

Monitoring shall be undertaken both on and off site to ensure the adequacy of the mitigation measures being employed. This will include the use of dust monitors as well as observation. Off-site monitoring shall include at least one location to the north-west of the Application Site before the broadleaf trees area, and at least one location between the Application Site and Ty Gwyn farm.

Spot measurements will be made at a frequency dependent on weather conditions and type of work undertaken. The minimum frequency is once every working day, increasing where/when the risk is greater.

The local weather forecast will be considered as part of the monitoring procedure. These conditions will be noted and the activities which have an increased risk of causing dust nuisance will be restricted when wind speeds exceed 30mph.

An on-site 0.25mg/m^3 action level will be set for stopping work to review the dust mitigation measures and working practices to prevent a reoccurrence. Spot samples will also be used as an early prompt to review dust mitigation measures before having to stop work. Additional preventative measures may be taken if dust can be seen being resuspended by the wind.

6.3 Noise

Condition 8 of the 2003 TCPA permission to construct the ILW Store at the site specifies the noise monitoring that is required for works at the site, at least relating to that permission. This monitoring has been suspended with the agreement of ENPA but will have been resumed prior to implementation of this ponds complex development. Logs of all noise monitoring will be kept within the site files and will be made readily available for inspection. Noise monitoring will be carried out in accordance with the technical specification within condition 8 of the 2003 permission or any subsequent requirements secured through the planning process for this development.

FIGURES

Figure 1: Site Compound / Laydown Area

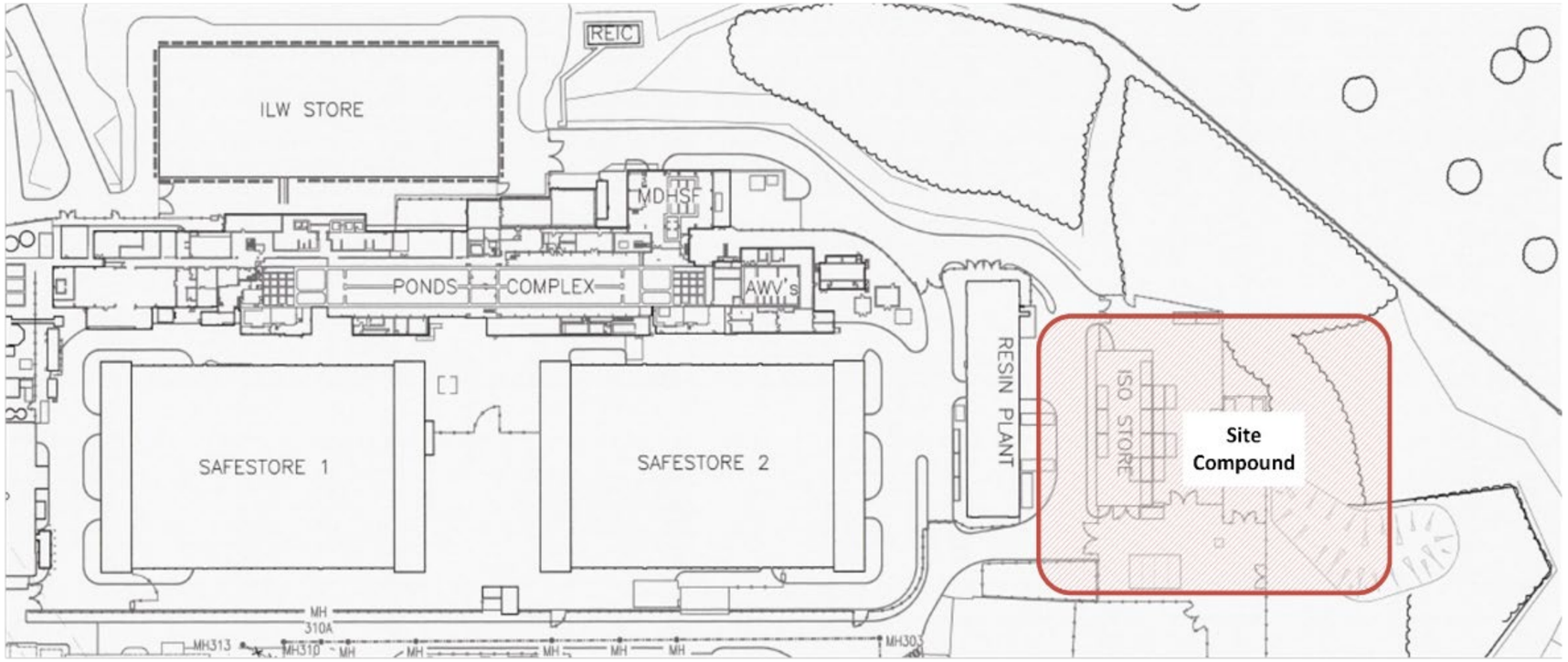
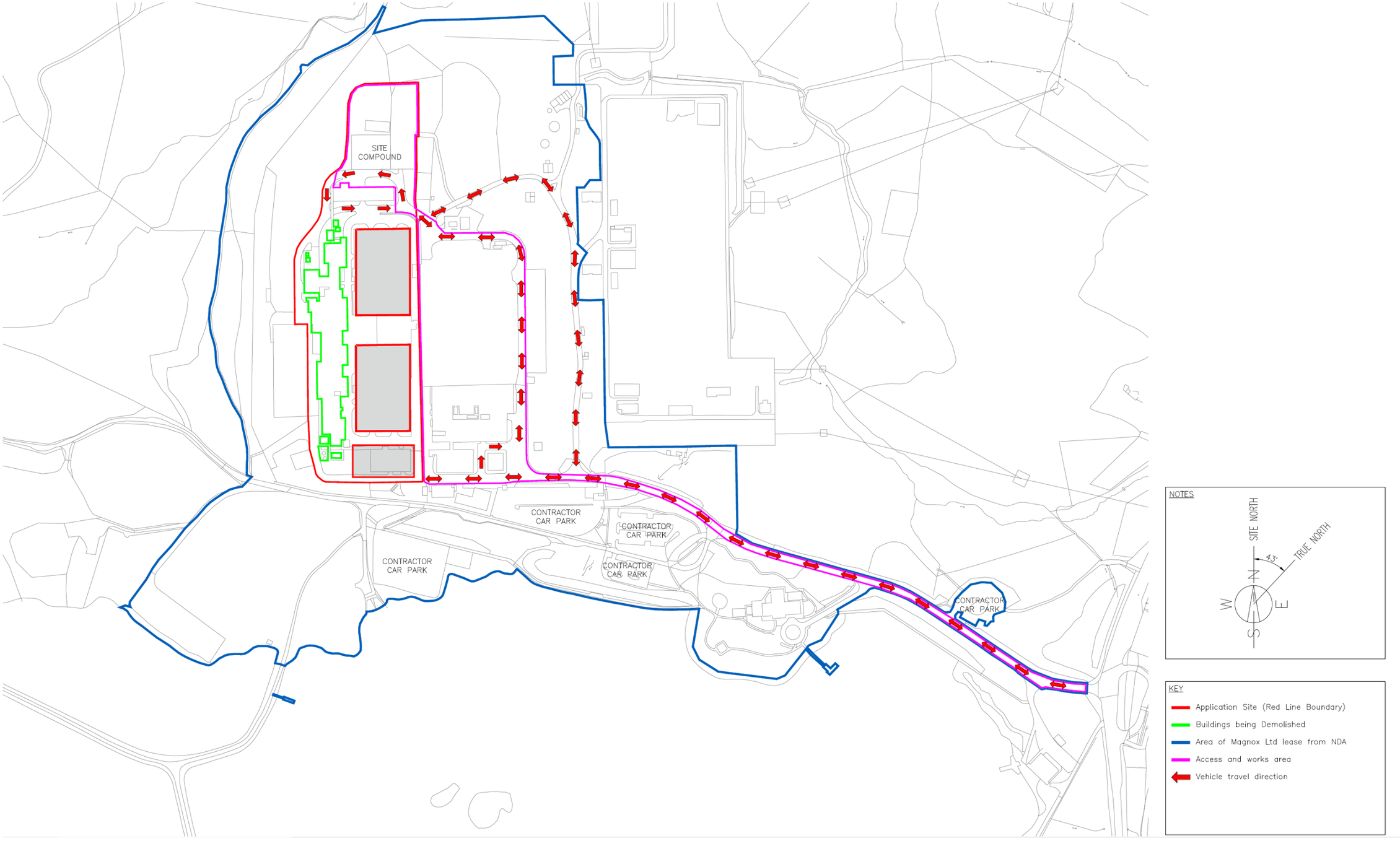


Figure 2: Access Route and Contractor Vehicle Parking Location(s)



APPENDIX A ENVIRONMENTAL IMPACT MITIGATION MEASURES

Topic	Mitigation
Stockpiles of demolition arisings	Temporary, secured sheeting of stockpiled material will be adopted to minimise windblown dust and rainwater run-off. All potentially contaminated (radiologically or otherwise) stockpiles including demolition arisings stored on impermeable hard-standings shall be bunded to prevent uncontrolled run off of contaminated water into storm drains systems. Captured run-off water will be routed for treatment prior to discharge. No potentially contaminated (radiologically or otherwise) stockpiles including of demolition arisings shall be stored on open, permeable ground. Temporary stockpiles of uncontaminated materials may be stored on open, permeable ground but only if underlain by separation and filtration membrane to prevent intermixing of waste with existing granular layers and to prevent ingress of fines.
Dust	The works will be conducted in accordance with: • BRE (2003) Guidance on the Control of Dust from Construction and Demolition Activities; and • BRE (2003) Controlling Particulates, Vapours and Noise Pollution from Construction Sites. Control measures will include: • Vehicle speeds on site will be restricted to 10 mph • Mobile water bowsers will be stationed on site throughout the duration of the operations and deployed to control dust on dry roads as necessary • Except during wet weather, water mists will be used during the handling (including loading / unloading or processing) of materials with the potential to cause airborne dust levels. On-site roads will be cleaned of mud/dust deposits if routine monitoring detects increasing turbidity or alkalinity in the storm drains system including the diversion culvert. This will include the use of re-circulating wheel washers and road cleaners as appropriate.
Noise	During the construction phase, British Standard 5228: Noise and vibration control on construction sites and open sites (BSI, 2014) will be used as guidance for noise control during construction work (and also for demolition work, if still in force at the time). In particular, the following control measures will be applied: • All construction plant and equipment shall comply with EU noise emission limits • All vehicles and mechanical plant shall be fitted with effective exhaust silencers • All major compressors, generators etc. shall be 'sound reduced' models • Machines in intermittent use shall be shut down in the intervening periods between working or throttled down to a minimum • Where practicable ancillary plant such as generators, compressors and pumps shall be positioned so as to cause minimum noise disturbance • Regular maintenance of plant and equipment will be undertaken • No plant or machinery will be left running unnecessarily • Reversing alarms shall be limited to "Broadband Reversing Alarm" or "White Noise Reversing Alarm"
Lighting	There is existing night-time illumination for on-site buildings, as well as low level 'street' lights for the roads and pathways necessary for security purposes, which includes a 24 hour security guard force. However, suitable additional external task lighting will be required for the demolition area [the Ponds Complex shown in Figure 1] and the lay-down areas in the site compound [highlighted area in Figure 1] to complete any early morning and end-of day activities if needed. Temporary low level directional mobile units will be used where outdoor task lights are needed.. Task lighting will only be used during the project working hours (see Section 3 above), when necessary, and is designed in such a way that light is directed towards the area where it is needed at an appropriate brightness to meet the requirements of BS EN 12464-2:2014 (or any subsequent update of this document prior to or during the works) for visual comfort and performance. The following mitigation and best practice will be implemented for task lighting: • Unless health and safety requirements dictate otherwise, no lighting shall face directly outwards from the works area • No lights will be positioned such that light would be directed to the woodland to the west of the works area • Lights will be switched off when they are not needed; this will include periods outside of normal site working hours • Checks will be made each evening to ensure no lights are left on in error • Where suitable, temporary lighting will be solar powered lighting with light sensing and timer controls.
Water within voids being infilled	For water interacting with radioactive contamination, the management of wastewater must comply with the existing discharge permit, permit no. EPR/GB3835DE, issued by Natural Resource Wales. The permit requires the operator to minimise the amount of radioactivity being discharged from the permitted site. Minimisation is primarily achieved by limiting water from encountering radioactive contamination in the first place. Where it is not feasible to prevent water encountering radioactive contamination the resulting water will be extracted and sampled before the appropriate management route is determined. Effluent will be discharged to Llyn Trawsfynydd, where appropriate via the site's existing Active Effluent Treatment Plant, via permitted routes regulated by NRW[1]. The capacity of the Active Effluent Treatment Plant is limited and therefore any exposed voids or contamination on the demolition slab will be managed, by covering voids and contamination. This will ensure that the rate of accumulation of contaminated water does not exceed the capacity of the Active Effluent Treatment Plant.
Other (non-active) water	Non-radioactive contaminants discharged via the site drainage system must comply with an existing discharge permit that limits the amount of pollutant concentration discharged to Llyn Trawsfynydd, Permit No. CG0087701. This permit sets a discharge limit of 50mg/ltr for suspended solids and an acceptable range of between 6 and 9 for pH. Additionally, the permit requires that the works shall be operated as far as reasonably practicable to prevent the discharge from containing any significant trace of visible oil or grease (there is an oil separator as part of the system prior to the discharge point). The quality of the site drainage water will be frequently checked with mitigating actions such as removing the source term for the contaminants, e.g. cleaning the demolition area, or treatment of the demolition run-off water. For the demolition area, where a high level of suspended solids is possible, the water will be intercepted, e.g. by bunding demolition area drains, for processing before discharging via the site drainage system, and pumping captured effluent into a processing plant that is will consist of a means of removing suspended solids, and an automatic CO_2 dosing system, to correct the pH. Treated water will then be discharged via the existing and permitted site drainage system. Where necessary, storm/road drains within the wider works area [beyond the immediate demolition area] will be fitted with protective mats to prevent any dust or sediment in wider areas from being directly washed into them during the works[2].

[1] The active effluent treatment plant contains a hydro-cyclone and fine mesh filters to remove particulates prior to discharging treated water.
[2] Prior to any works commencing, a review of the site surface water drainage system will be carried out to determine appropriate drain protection for sediment and define which drains need to be temporarily blocked and suitable reroutes established.

Topic	Mitigation
Water pollution, including prevention of spills and leaks	Temporary fuel storage tanks or tankers will be required to refuel demolition machinery, these shall be located, managed and operated in accordance with all statutory requirements and best practice. Guidance on Pollution Prevention (GPP) documents are applicable in Wales. The Applicant consider these GPPs as good practice guidance. Tanks will be properly maintained and kept in good condition and protected by suitable anti-collision barriers unless the tank is situated in a position where it cannot be struck by vehicles. Intermediate Bulk Containers (IBCs) will be stored indoors wherever possible but if stored outside will be covered to prevent ingress of rainwater to bunds[3] and be protected from extremes of temperature and sunlight. Drums, cans etc. will have sufficient strength and structural integrity so that they will not leak or burst in normal circumstances and will be stored in a bunded area away from gullies, drains or boreholes. Mobile plant such as generators, compressors, etc.; • will generally utilise plant which has an integrated bund or drip tray or an appropriate bund or drip tray will be placed beneath the item of plant • will be stored and used away from drains, gullies or boreholes, but where this is not possible drain covers will be used • will be sited on a hard standing where practical. Funnels and drip trays will be used during refuelling of mobile plant. Bunds will be used at locations for storing any hazardous liquid containers and must have the capacity to contain 110% of the volume of the largest container within the bund. Additionally, when more than one container is stored within a single bund, it must also be able to contain at least 25% of the combined volume of the containers (whichever is the greater volume) unless otherwise agreed with the Site Environment Team. All tanks, bowsers etc. will: • be clearly labelled identifying the contents, volume and owner • be stored and used in compliance with Guidance on Pollution Prevention (GPP) 26 • be provided with a copy of the notice “Spillages on Site – Emergency/Contingency Response” • be provided with a suitable emergency spill kit • be inspected on a regular basis with a record maintained of all inspections. All static tanks, bowsers, drums and cans etc. used for the storage of fuels or other potentially polluting substances will: • comply with GPP 2 (where relevant) and GPP 26 • be positioned in an area approved by the site environment team • have any valves/taps etc. kept locked to ensure that the contents are not discharged without authorisation • be marked to show any hazards present. All washing and cleaning operations of other vehicles or plant will be carried out only in designated areas agreed by the site environment team and will be clearly marked on the ground and on relevant plans. The cleaning area will be isolated from the surface water drainage system and any unmade ground or porous surfaces, i.e. any washings agreed should pass to the foul water drainage system. This requirement includes the use of power washers.
Radioactive ground contamination (minimisation of new open ground)	In order to minimise any increase in migration of radioactive ground contamination in the vicinity of the ponds complex, as and when it is necessary to have new and temporary uncovered ground, this will be minimised in terms of exposed area and in terms of duration.
Ecology	• Works lighting shall be directed away from areas of habitat wherever possible, especially the woodland to the west of the Application Site. • The area to be demolished should be inspected by an ecologist prior to the works commencing to ensure no birds or bats are present. • All staff working in the Site Compound Area [as identified in Figure 1] will be given a toolbox talk on ecology that includes reptiles, and this will explain that there is a low risk of reptiles being present in the area, and that as they are legally protected, if any are seen then works in the immediate area should stop and the site environment team informed so that reptiles are not harmed by the works and appropriate forward actions can be taken.
Waste management	Acceptance criteria, including for emplacement of demolition arisings, will be produced for approval by NRW as part of the environmental permit variation. This means that only suitable wastes and materials are used for void infill (or retained in situ) as agreed with NRW. The acceptance criteria will have associated internal management arrangements and compliance checks. Waste which is not suitable for backfilling ponds complex voids, such as wood, metal, cladding, roofing materials and discrete asbestos-containing wastes, will be segregated and consigned to appropriate lockable waste skips if necessary, in preparation for being sent off site for recycling or disposal as appropriate. All the waste will be monitored for potential radioactivity and where present the waste will be disposed of via existing radioactive waste disposal routes covered under an existing permit. The types of non-radioactive waste generated from the demolition of the ponds complex will be managed in accordance with site procedures and sent for appropriate treatment, recycling or disposal include metals, wood, glazing, bituminous materials and some hazardous waste such as asbestos, Waste Electrical and Electronic Equipment (WEEE) and roofing materials.

[3] It is not necessary to bund IBCs of clean, potable water, however all such IBCs must be labelled as to their contents and only used for that purpose.

APPENDIX B GROUNDWATER AND DRAINAGE MONITORING

<table>
<tr><th>Type of Monitoring & Determinands</th><th>Locations (& Alternatives if not available)</th><th>Frequency of monitoring</th><th>Description of the assessment and triggers
Data reviewers will take into account environmental conditions during the monitoring period (e.g. rainfall) and works phase activities which may have affected the monitoring results.</th></tr>
<tr><td>High frequency monitoring with telemetry – surface water drains
Threshold alerts for pH and turbidity.
Additional determinands: electrical conductivity, dissolved oxygen, temperature.</td><td><table><tr><th>Flowpath</th><th>Drain (Alternative)</th></tr><tr><td>Flow through the made ground filled trough.</td><td>MH6 (MH7)</td></tr><tr><td>Down-gradient manhole of both southern and northern surface water drainage routes.</td><td>MH103 (MH103 ‘A’ chamber east and down-gradient of MH103)</td></tr></table></td><td>Hourly.
Subject to refinement as necessary at each location.</td><td>Threshold value alerts related to discharge consents:
Suspended solids (estimate based on turbidity[4]) – >50mg/l
pH – <6 or >9
Three consecutive hourly threshold alerts will trigger a review of the data at the earliest opportunity by a SQEP. The SQEP will take action to stop or amend a works activity if necessary and/or take environmental protection measures and/or arrange additional ‘response’ sampling as necessary.
Additionally, review of the full dataset will be undertaken monthly by a SQEP to identify incremental changes to surface water quality. The SQEP review will have a regard to:
adverse trends; and/or
step changes in concentration or value.</td></tr>
<tr><td>High frequency monitoring with telemetry - groundwater
Electrical conductivity
Dissolved oxygen
Temperature
pH
Oxidation reduction potential (ORP)</td><td><table><tr><th>Flowpath</th><th>Monitoring Well (Alternative)</th></tr><tr><td>Monitors the made ground filled trough</td><td>At least two boreholes located between the Ponds Complex and the northern part of Reactor 1.</td></tr><tr><td>South of the PC, monitors southern flowpath.</td><td>BH502 (BH503)</td></tr><tr><td>Northern flowpath.</td><td>Currently under investigation. Position(s) to be determined if the pathway is confirmed.</td></tr></table></td><td>Hourly.
Subject to refinement as necessary within each monitoring well.</td><td>Review of this dataset will be undertaken monthly by a SQEP to identify incremental changes to groundwater quality. The SQEP review will have a regard to:
adverse trends; and/or
step changes in concentration or value.</td></tr>
<tr><td>Visual & olfactory monitoring of surface water
Observations indicative of contamination:
Visual: For example, free product, turbidity or discolouration.
Olfactory: For example, hydrocarbon or solvent odour.</td><td><table><tr><th>Flowpath</th><th>Drain (Alternative)</th><th>Comments</th></tr><tr><td>Flow through the made ground filled trough.</td><td>MH6 (MH7)</td><td>The observations will be made on a sample obtained by pumping water from the manhole chamber into a small container</td></tr><tr><td>Down-gradient manhole of both southern and northern site surface water drainage routes.</td><td>MH103 (MH103 ‘A’ chamber east and down-gradient of MH103)</td><td>Installed pump run and sample collected in a small container for observations</td></tr><tr><td>Surface water captured from site drainage</td><td>Diversion pump sumps</td><td>Chamber viewed from surface.</td></tr><tr><td colspan="3">Water flowing or standing on hardstanding within the disposal area.</td></tr></table></td><td>Weekly inspections by SQEP of surface water to make visual and olfactory observations using a standardised scale.</td><td>Preparation of weekly memoranda presenting visual and olfactory observations and reviewing the findings.
The SQEP review will have regard to changes in surface water quality from results presented in previous memoranda.
Unusual visual or olfactory evidence of contamination will trigger additional response sampling.</td></tr>
<tr><td>Site activity diary
Record keeping of site activities and events (including incidents). Diary of activities and events pertinent to the water environment provided to SQEP including: overflow run-off into drains, fuel spills, removal of surface cover, and restrictions in access to monitoring locations.</td><td>N/A</td><td>Monthly or as required after an event</td><td>SQEP personnel to respond to site work events as required.
Event changes including removal of surface cover or use of alternative locations for monitoring instrumentation or ‘response’ sampling.
The diary entries will act as a source of information to support monthly review of incremental data.</td></tr>
</table>

[4] Correlation coefficient of turbidity to suspended solids (SS) is location specific and will be calculated by taking an initial water sample for laboratory analysis of SS.

Type of Monitoring & Determinands	Locations (& Alternatives if not available)	Frequency of monitoring	Description of the assessment and triggers Data reviewers will take into account environmental conditions during the monitoring period (e.g. rainfall) and works phase activities which may have affected the monitoring results.
Routine discharge water quality check Existing site drainage discharge sample check for: • pH • Conductivity • Suspended solids	**Flowpath**: Surface water captured from site drainage **Drain (Alternative)**: Diversion pump sumps	Weekly snatch samples	Weekly sample taken to the site laboratory and checked against the following trigger levels: • pH : 6 < pH < 9 • Turbidity : Palintest turbidity tube test [indicative trigger set for 20mg/ltr suspended solids] • Conductivity : > 500 microsiemens Triggers prompt SQEP investigation to look for the cause and can involve off-site analysis of a discharge sample to determine whether the permitted discharge pollutant limits have been exceeded.