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0816 / Enterprise Autos / MPP2 Application / Supporting information

1.1 Wider context

This deployment aims to allow the treatment of a contaminated groundwater plume resulting from an unleaded loss from an underground storage tank.

An Updated Site Investigation document (Report Ref. 25.0861.29.2 attached to the application) was sent to NRW, this document comprised all the sampling and investigation rounds performed on site up to September 2025 and included a revised Conceptual Site Model from the site.

It is anticipated that contaminated soils will remain around the Underground Storage Tank, the removal of which will be undertaken as part of sitewide redevelopment for a continued commercial use, however this falls outside of the scope of this application.

A Remediation Strategy (Report ref. 25.816.18.3 attached to the application) has been produced to address Planning Condition 3 of the Caerphilly Council Planning Condition, Application Number 23/0440/FULL. Additional information for the remediation strategy was also sent to the Council in the document 0816.18.D _Geo2_Supplementary Planning Detail also attached to the application.

The treatment system will be situated and installed in a manner to work in conjunction with the proposed redevelopment and the risk assessment undertaken herein factors in the proposed and current onsite receptors. It should be noted that as part of the scheduled demolition works onsite, it will be necessary to relocate the plant elsewhere on the site part way through the works, the plans and risk assessments included here allow for the relocation.

Additionally, this application will be conducted in tandem with a Licence to abstract water **WA/056/0062/0003** and a Discharge Consent **EPR/DB3693ZK**. To permit the abstraction, treatment and discharge of water, returning to the aquifer the treatment wastewater to accelerate treatment by flushing the source zone and by minimising waste generation (should the liquid be disposed of).

1.2 Changes to proposal since consultation

The Client is now looking to undertake Knock Down and Rebuild of the site. This will include the removal of relevant components of the existing fuel storage and distribution infrastructure. This planning application will not influence the scope of these works of the approach detailed herein.

1.3 Site Plan

Two site plans have been attached to the application, these are:

- Figure 41.1. Before redevelopment. This shows the initial treatment system and trenches locations considering the current PFS layout.
- Figure 42.1. After redevelopment. This shows the treatment system and trenches after redevelopment.

1.4 Duration

It is envisaged that these works will be concluded within 12 months. However, discussion with NRW has indicated that a 6-month verification period will be required, should performance of the system has not entirely achieved its objectives it may be necessary either to continue the operation, or potentially to temporarily restart treatment for a period. In such a circumstance, it may prove necessary to extend the duration of this consent for a further limited period beyond the 12 months. In such a circumstance, the relevant local officers at NRW would be consulted.

1.5 Conceptual Site Model and Risk Assessment

Source	*Receptor*	*Harm*	*Pathway*	*Probability of exposure*	*Consequence*	*Magnitude of risk*	*Justification for Magnitude*	*Risk Management*	*Residual Risk*
Emission Treated wastewater.	Commercial Site Users	Human health	Dermal exposure to surface spills	Medium	Low	Medium	Potential exposure to contaminants.	Treatment area secured with fencing and bunding of plant.	Low
	Controlled Waters	Controlled Waters	Soakaway of treated wastewater	High	Low	Medium	Groundwater returned to the plume will be less contaminated that the water within the plume.	Management of treated effluent concentration to ensure effective treatment. In the event of an impact to the River Ebbw, booms and adsorbents will be deployed from stored onsite.	Low
Emission Vapour / Odour	Geo2 staff and workers on site	Human health	Inhalation of vapours released from treatment system	High	Low	Medium	Exposure may occur in outdoor areas; dilution effects will reduce severity.	Emissions will be monitored. Treatment vessels will be covered and have venting.	Low
	Residential and commercial Neighbouring Land Users	Human health		Low	Low	Low	Dilution effects would likely remove any potential hazard. Water treatment vessels will be enclosed.	None	Low
Emission Noise	Geo2 staff and workers on site	Human health	Emitted from system	High	Medium	Medium	. Volume will not exceed 60-70dB at any point in the plant.	Noise monitoring will be undertaken. Staff will be provided with suitable ear defenders. All non Geo2 staff will be excluded from treatment area	Low

	Residential and commercial neighbouring and onsite Land Users	Human health		Low Likelihood	Mild	Low	Volume will not exceed 60-70dB at any point in the plant.	Plant noise will be monitored.	Low

1.6 Management

Geo^2 have a team of experienced WAMITAB accredited managers, in addition to Steven Jackson (listed in the form) holiday and sickness cover will be provided by the following technically competent team members; Adam Wilson (DOB 20.08.81), Ben Wilson (11.07.87), Tom Evans (DOB 25.04.92) and Peter Phillips (DOB 25.12.93).

1.7 Proposed Control Measures

All monitoring and control measures assessment will be undertaken by trained Geo^2 staff and supervised by a TCM.

- Odour and VOC will be monitored during site visits; vessels are enclosed to prevent odour generation.
- Remediation of groundwater contamination is the key objective of the treatment works, and no further control measures are considered necessary for groundwaters.
- Treated wastewater: Should this exceed the discharge limits as agreed in the Discharge Consent, the treatment system will be shut down, and the spent GAC will be quarantined within the vessels to be removed from site by appropriate subcontractors before activated carbon is replaced and the system is re-started.
- Potential leaks from the treatment plant are controlled using a bunded area. In order to control potential leakages during unmanned operation the oil water separator and the bund is fitted with a high-level sensor, designed to feedback into the system and shut down the plant until manually reset. Fortnightly monitoring is undertaken to ensure the quality of all aspects of the treatment system. Measures in use are such that it is considered unlikely that any release could occur from the GACs or oil water separator to the wider environment.
- Noise is considered unlikely to be an issue as all plant is kept sealed during works. Should however the noise be considered a nuisance, screens (such as Heras sound barrier) will be installed around the perimeter of the Heras fenced compound to act as an acoustic baffle.
- LNAPL will be manually decanted into the quarantine storage vessel, so a level overflow is not possible. Level overflow in the product separator is controlled by high level shutdown sensors in the oil water separator which will cease system operation, preventing overflow.

1.8 Emissions action plan

If trigger levels are exceeded, then works will be terminated until mitigation measures are put in place that will adequately address the situation. Mitigation measures may include improved ventilation to address odours, a review of PPE to ensure staff safety, use of quieter equipment or methods, scheduling and targeting of treatment works to ensure hydrocarbons in water can be appropriately controlled.

All monitoring is carried out by appropriately qualified Geo^2 staff.

Indicator parameters to be used to assess pollution of the environment and harm to human health are as follows:

- Groundwater, to demonstrate the effectiveness of the treatment works, groundwater samples are obtained monthly from existing remediation wells on site. These will be tested at an accredited laboratory to target the recovery of LNAPL and impacted groundwater from the remediation wells. Following completion of the works, groundwater samples will be obtained in line with best practice guidance and will be submitted to an accredited laboratory for analysis for contaminants associated with hydrocarbons (as necessary). Additional probe data may also be obtained from the site as considered necessary. Remediation Target Values (RTVs) were proposed in the Remediation Strategy, however followed discussions with NRW the following RTVs are being proposed:

Contaminant	*Soils (mg/ kg)*		*Groundwater (mg/l)*		
	Max Conc. Onsite	*GAC (S4UL and C4SL) Commercial*	*Max Conc. Onsite*	*EQS Targets adopted as a surrogate pre spill condition*	*Source of Value*
Aliphatic C5-C6	*0.33*	12,000,000	*0.378*	*1.5*	*CL:AIRE*
Aliphatic C6-C8	*1.02*	40,000,000	*2.97*	*1.5*	*CL:AIRE*
Aliphatic C8-C10	*9*	*2,000*	*1.41*	*0.3*	*CL:AIRE*
Aliphatic C10-C12	*3*	*9,700*	*0.35*	*0.3*	*CL:AIRE*
Aliphatic C12-C16		*590,00*	*7.56*		
Aliphatic C16-C21		*1,800,000,000*			
Aliphatic C21-C35					
Aromatic C5-C7	*1*	*26,000*	*0.545*	*0.01*	*EQS (Benzene)*
Aromatic C7-C8	*3.5*	*56,000*	*5.63*	*0.074*	*EQS (Toluene)*
Aromatic C8-C10	*446*	*3,500*	*21.1*	*0.03*	*EQS (Xylenes)*
Aromatic C10-C12	*56*	*16,000*	*2.44*	*0.09*	*CL:AIRE*
Aromatic C12-C16		*36,000*	*1.3*		
Aromatic C16-C21		*28,000*	*0.32*		
Aromatic C21-C35		*28,000*	*0.11*		
Benzene	*0.4*	*27*	*0.545*	*0.01*	*EQS (Benzene)*
Toluene	*3.5*	*56,000*	*5.63*	*0.074*	*EQS (Toluene)*
Xylenes (total)	*21.8*	*5,900*	*1.37*	*0.03*	*EQS (Xylenes)*

- Treated Waters discharge will be monitored weekly after the secondary GAC for the first 4 weeks of operation during the set-up and commissioning phase and fortnightly thereafter. Trigger values for treated water discharge will be the derived from the Discharge Consent **EPR/DB3693ZK**. Water quantities are recorded using an inline flowmeter (GMDX model). Where values are exceeded or suspected or exceeding, then the system will be shut down until activated carbon in GACs can be replaced.

- Surface Water, the River Ebbw will be inspected during each visit and upstream and downstream (referenced to the PFS) water samples will be taken monthly. These samples will be submitted to an accredited laboratory for analysis for contaminants associated with hydrocarbons (as necessary). If any visual hydrocarbon is detected during these inspections, hydrocarbon sorbent booms will be deployed in the River for hydrocarbon recovery.

- VOCs in air, as site is an active PFS it is expected VOCs will be present in the air around site at elevated levels. Monitoring will be undertaken during commissioning of the treatment system and during each fortnightly visit inside the process container, immediately outside the container (on the access steps) and of the oil water separator. Monitoring will be carried out with a PID (photo-ionisation detector) calibrated to isobutylene which enables detection of volatile hydrocarbons and is serviced regularly in line with requirements and calibrated prior to use on site.

- Odour, fortnightly olfactory monitoring at the site is undertaken whilst Geo2 are onsite. As site is a PFS it is not anticipated that the treatment system will increase odour either on site or at the site boundary. Should the treatment system produce noticeable odours likely to pose a nuisance then works will be reviewed in order to identify and mitigate the source. In accordance with the DEFRA guidance on olfactory monitoring, where the intensity and offensiveness are of 2 or greater, then measures will be taken to limit quarantines (LNAPL) waste volumes and to improvecover or ventilation air flow of contain vessels.

- NoiseAs site is a PFS it is not anticipated that the treatment system will increase noise at the site boundary. Background noise will be monitored prior to commissioning and compared to noise levels from the running system to ensure there is no more than a 5dB increase. In the event of a noise complaint,The fencing will be supplemented by hears sound proofing and the noise monitoring repeated to demonstrate the improvements.

- Dust, no part of the works is likely to result in any detectable volume of dust, and as such no monitoring is necessary.

- General site maintenance, all plant is inspected during fortnightly visits to ensure that all plant and equipment is operating optimally, and that integrity of containment measures is sound.

1.9 Monitoring works

Monitoring works will be undertaken daily during commissioning.

Monitoring points locations are shown in Figure 41 (before redevelopment) and Figure 42 (after redevelopment)

A site diary is retained onsite to detail dates of visits and works undertaken, log presence and duration of TCM visits and to detail maintenance and monitoring measures required and enacted.

All laboratory analysis is held in a raw data format comprising the laboratory certificates, data would also be collated to permit interpretation of the data. This data can be made available in Microsoft excel spreadsheets and graphs, or as Adobe Acrobat files.

Monitoring of air, vapours and noise during works is being recorded and compared to the trigger level and noted in the site diary. Copies are also stored electronically.

Records maintained during the commissioning and operational phase of the works include the following-

- Up to date site diary and collated site data.
- Monitoring of noise / odour / VOC.
- Condition of site, security etc
- Groundwater water levels when sampling
- River Ebbw inspection Log
- Thickness of phase separated product when detected
- Results of laboratory analysis of any samples
- Flowmeter treated volumes and GAC integrity
- Details of optimisations and changes to the treatment system
- Fuel recovered and waste disposal records.
- General observations.