



NEW INN FIRE STATION, NEW ROAD, NEW  
INN, PONTYPOOL  
MTL: EPR/LB3106LZ

REMEDIATION PROJECT  
DEPLOYMENT FORM SUPPLEMENTARY INFORMATION



Revision	Date	Comments	Author	Approved by
Original	24/09/25	Original	David Slater	Neil McLeod

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B1 - About the Operating Site.

**Site Overview and Plan**

The Ground Investigation Reports

Previous site investigation reports:

- Terra Firma *Geotechnical and Geoenvironmental Report New Inn Fire Station Pontypool* Dated 31<sup>st</sup> May 2023 (ref: Job17670)
- Envirotreast Solutions Limited *New Inn Fire Station Groundwater Monitoring Report Rev 2* Dated May 2025 (Ref: ESL/NIGW/101)
- Envirotreast Solutions Limited *New Inn Fire Station Supplementary Ground Investigation Report* Dated January 2025 (Ref: ETL/AN/082)
- Envirotreast Solutions Limited *New Inn Fire Station, New Road, Pontypool Remediation Options Appraisal Rev1* Dated June 2025 (Ref: ROA/NI/101)
- Envirotreast Solutions Limited *Redevelopment of New Inn Fire Station, Pontypool Proposed Remediation Strategy and Method Statement* Dated August 2025 (ref: ESL/NI/101)

Figure 1 – New Inn Fire Station Site Plan



**Site History**

Earliest mapping (1882) shows the site to be fields / pastureland and remained as that until around 1963 with the construction of the New Inn Fire Station building and associated car park and access road. The Fire Station building, access road and carparking remain at the time of writing.

**Site Description**

The site is roughly rectangular in shape and occupies an area of around 0.15 hectares. The existing fire station building occupies the relative centre of the site with associated carpark and access road to the north and south respectively. The site is bounded by New Road to the south, residential properties to the east, industrial / residential properties to the west and the council maintenance depot and car repair workshop to the north.

**Ground Conditions**Made Ground

Made ground at the Site comprises cohesive and granular materials to a maximum depth of 1.7m bgl.

Superficial Deposits

The underlying River Terrace Deposits comprised a broadly coarsening-downwards sequence. Sandy gravelly clay was noted at shallow depths, grading into granular soils with depth. Cobble and boulder content also increased with depth.

Bedrock

Suspected weathered bedrock of the Raglan Mudstone Formation was noted in 1no location from 3.3m bgl.

**Future Use**

Following demolition of the existing fire station building and subsequent remediation the site will be redeveloped as a new fire station facility.

**Contamination & Remediation**

Detectable concentrations of PFAS, predominantly comprising PFCAs (perfluorinated carboxylates) and PFOS (perfluoro octane sulphonate) with occasional detections of 6:2 FTS (fluorotelomer sulphonate). The range of PFAS detected in soils and soils leachate were broadly comparable.

A watching brief / discovery strategy will be undertaken for hydrocarbon contamination (TPH) resulting from fuel and / or lubricant spills

Table 1 - PFAS Detection in Soils

Contaminant	Identified Concentrations (ug/kg)	Number and location detections
PFBA	1.0 & 4.5	TP103 0.2m & TP106 0.2m respectively
PFPeA	2.2, 1.3 & 9.4	TP103 0.2m, TP104 0.9m & TP106 0.2m respectively
PFHxA	1.1, 1.0 & 2.4	TP103 0.2m, TP104 0.9m & TP106 0.2m respectively
PFHpA	1.3, 1.2 & 2.7	TP103 0.2m, TP104 0.9m & TP106 0.2m respectively
PFOA	2.2 & 4.9	TP103 0.2m & TP106 0.2m respectively
PFNA	1.3, 4.4 & 0.7	TP103 0.2m, TP106 0.2m & TP106 1.3m respectively
PFOS	0.9, 2.8, 0.8, 3.4, 1.2 & 0.8	TP101 2.5m, TP103 0.2m, TP105 2.5m, TP106 0.2m, TP108 2.4m & TP109 2.5m respectively

Leachate testing was carried out on soil samples collected from trial pits. Exceedances are summarised overleaf:

Table 2 - Soil Leachate WQS / EQS Exceedances

Contaminant	WQS (ug/l)	Source	Max conc (ug/l)	Exceedances
PFBA	0.05	LOD	0.75	5 (TP103 0.2m, TP104 0.9m, TP106 0.2m, TP108 2.4m, TP109 2.5m)
PFPeA	0.05	LOD	1.44	5 (TP103 0.2m, TP104 0.9m, TP106 0.2m, TP108 2.4m, TP109 2.5m)
PFHxA	0.05	LOD	0.49	3 (TP103 0.2m, TP104 0.9m, TP106 0.2m)
PFHpA	0.05	LOD	0.41	3 (TP103 0.2m, TP104 0.9m, TP106 0.2m)
PFOA	0.05	LOD	0.34	3 (TP103 0.2m, TP104 0.9m, TP106 0.2m)
PFNA	0.05	LOD	0.17	1 (TP106 0.2m)
PFOS	0.00065	UK EQS	0.2	1 (TP103 0.2m, TP108 2.4m, TP109 2.5m)
6:2 FTS	0.2	LOD	0.5	1 (TP104 0.9m)

Groundwater quality was investigated via the installation of 6 no windowless boreholes across the site. Subsequent monitoring recorded the following groundwater WQS exceedances

**Table 3 - Groundwater WQS Exceedances**

Contaminant	WQS (ug/l)	Source	Max conc (ug/l)	Exceedances
PFBA	0.05	LOD	0.15	BH04, BH05, BH06 (Feb 2025) BH01 (May 2025)
PFPeA	0.05	LOD	0.62	BH02-BH06 (Feb 2025 AND May 2025)
PFHxA	0.05	LOD	0.41	BH02-BH06 (Feb 2025) BH01-BH06 (May 2025)
PFHpA	0.05	LOD	0.29	BH02-BH06 (Feb 2025) BH01, BH03-BH06 (May 2025)
PFOA	0.05	LOD	0.12	BH03-BH06 (Feb 2025) BH01, BH04, BH06 (May 2025)
PFHxS	0.05	LOD	0.15	BH04-BH06 (Feb 2025) BH01, BH04-BH06 (May 2025)
PFOS	0.00065	UK EQS	0.79	BH01, BH04-BH06 (Feb 2025) BH04-BH06 (May 2025)
PFHpS	0.001	LOD	0.002	BH01 (May 205)
PFPeS	0.001	LOD	0.003	BH01 (May 205)
PFBS	0.001	LOD	0.005	BH01 (May 205)
PFNA	0.001	LOD	0.003	BH01, BH06 (May 205)

Surface water quality was monitored (upstream and downstream). WQS exceedances are summarised below:

**Table 4 - Surface Water WQS Exceedances**

Contaminant	WQS (ug/l)	Source	Max conc (ug/l)	Exceedances
PFBA	0.001	LOD	0.001	Upstream
PFOA	0.00065	LOD	0.005	Upstream (Jan and May 2025) Downstream (Jan 2025)
PFOS	0.00065	EQS	0.0056	Upstream (Jan and May 2025) Downstream (Jan and May 2025)

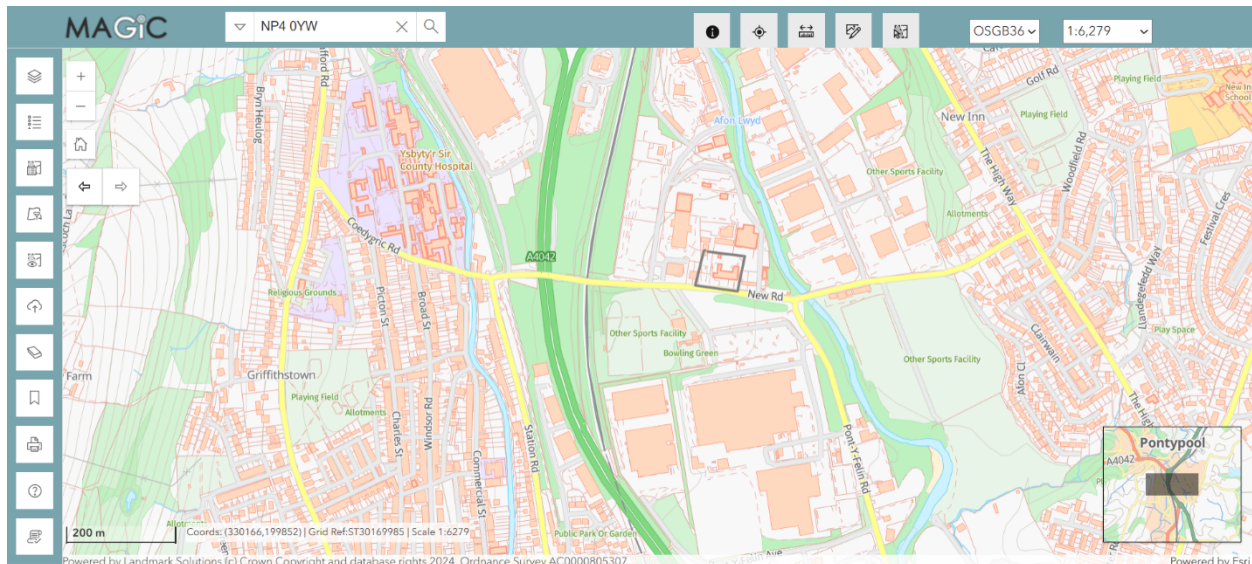
Figure 2 – Remediation Strategy.



The proposed remediation strategy comprises pathway treatment via the installation of a Permeable Reactive Barrier (PRB) at the eastern boundary and additional sections along the northern and southern boundaries. The purpose will be to intercept PFAS impacted groundwater as it migrates off site toward the nearby Afon Lwyd.

**Site Sensitivity.**

Figure 3 – Locally Sensitive Sites [source - <http://www.magic.gov.uk>].



Easting = 329734

Northing = 199444

Grid Ref = ST297994

National Grid Field No = ST 29734 99444

Latitude = 51°42'22"N

Longitude = 3°01'04"W

Postcode = NP4 0YW

No sensitive statutory receptors are in close proximity to the proposed works.

The proposed treatment area is adjacent to the eastern site boundary.

Beyond the site boundary, potential receptors are:

- General public using gardens next to site (eastern boundary)
- General public / workers at the Council Maintenance Depot (North east of the site boundary)
- Surface waters, Afon Lwyd is approx. 80m from the site to the east / south east
- North - industrial units.
- South – New Road
- West – Industrial units

The potential / perceived risks to these have be incorporated into our Environmental Risk Assessment.

Figure 4 - Site Location Showing Site Access, Location of Mobile Plant and Environmental Monitoring Locations.

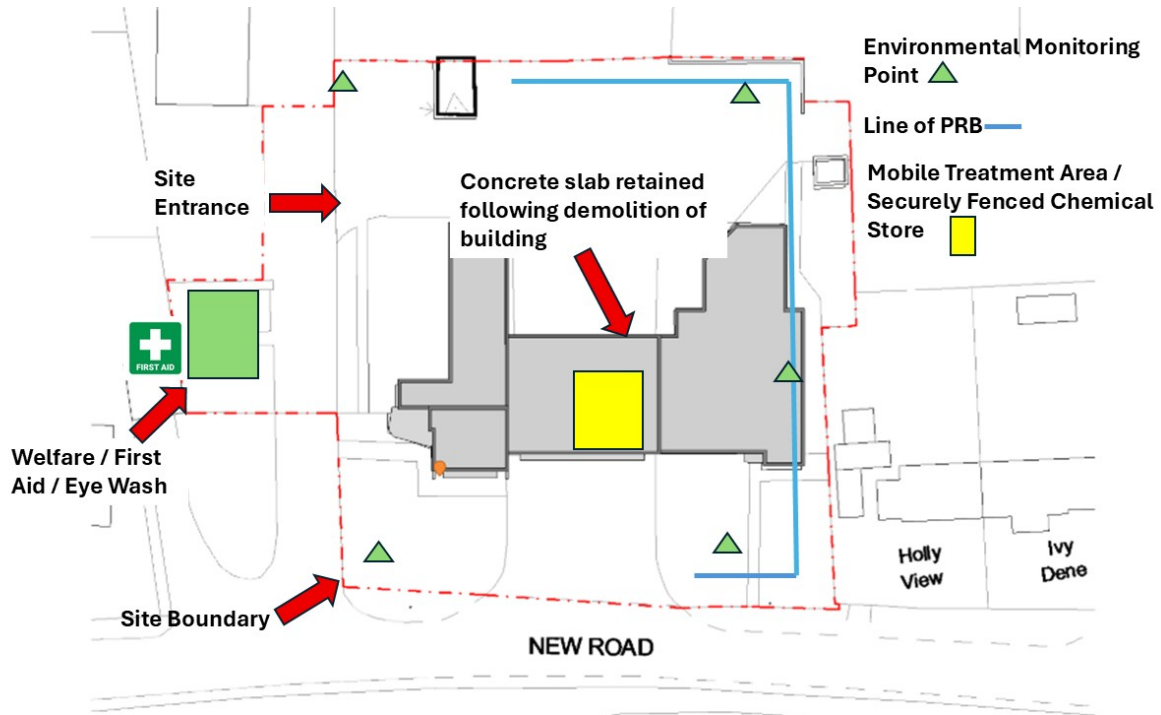


Figure 5 – Proposed Mobile Plant including Engineered Containment System.

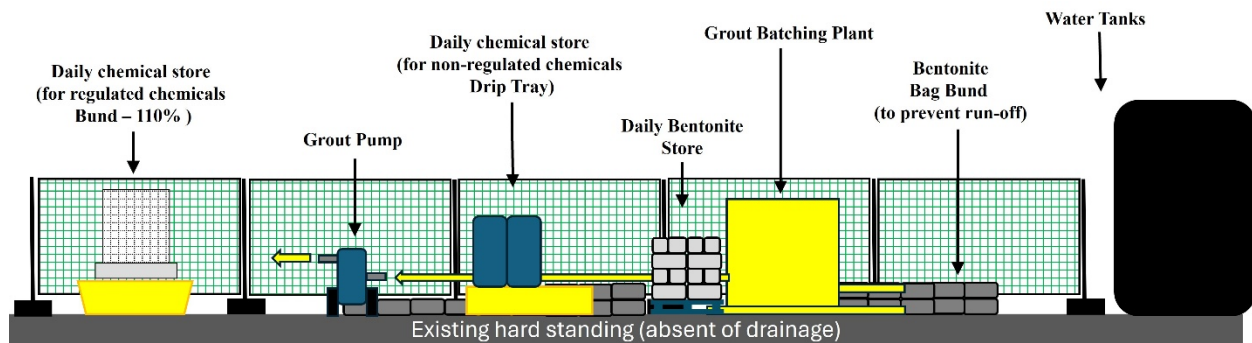
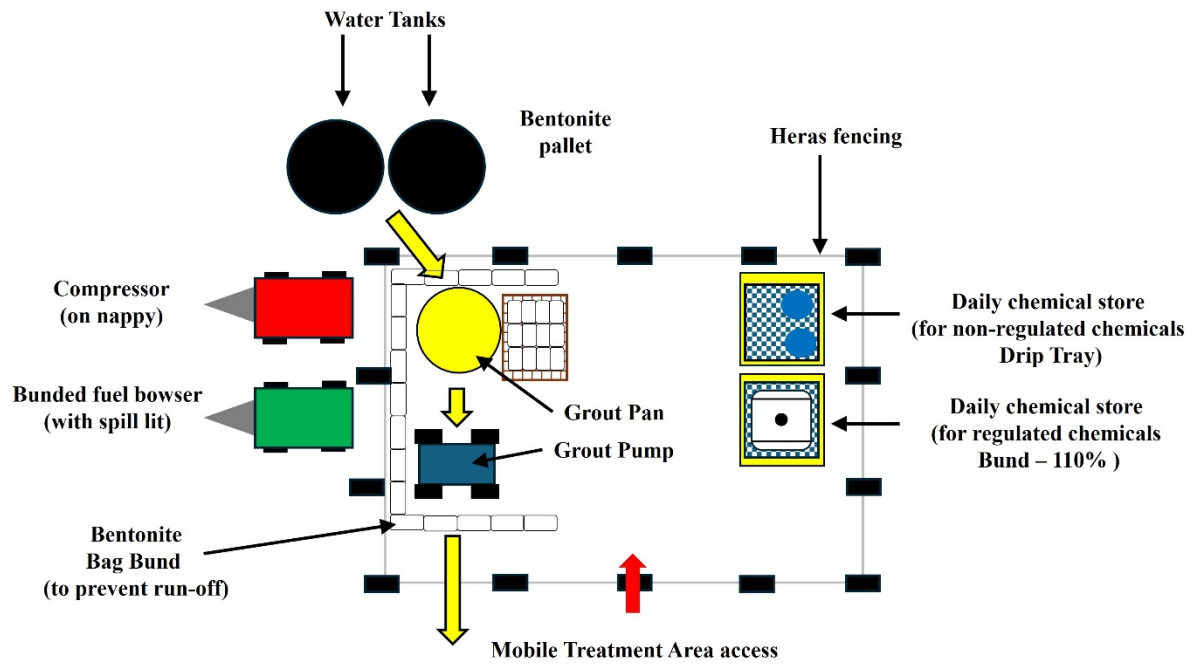


Figure 6 – Proposed Mobile Plant Setup.



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Figure 7 – Typical Mobile Plant including Engineered Containment System.



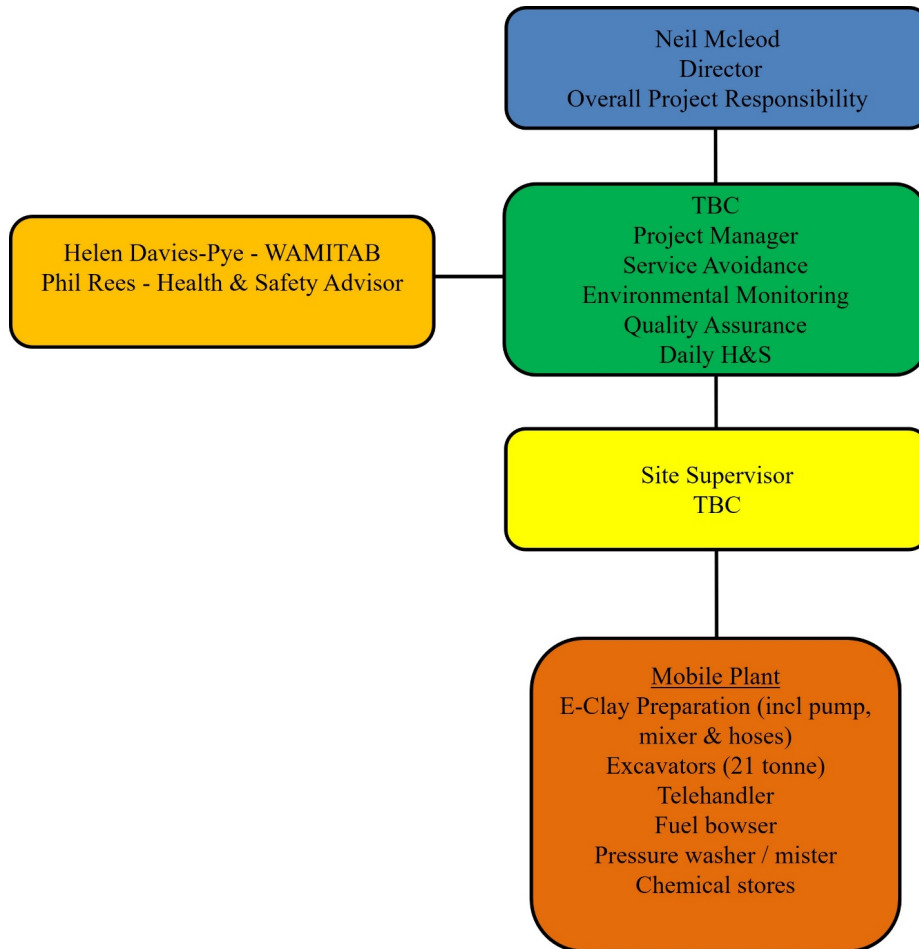
**Section B**

**B4 – Site Management & Supervision**

Figure 8 – Contract Relationships.



Figure 9 – Site Responsibilities.



**B7 – Conceptual Site Model and Risk Assessment**

Conceptual Site Model.

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
PFAS & potential TPH compounds associated with contaminated soils & groundwater	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact, ingestion and inhalation of contaminated soil, dust & vapours.	Low to medium	Medium	Medium	Short & long term health effects	Design & installation of in-situ E-Clay Permeable Reactive Barrier installation to protect offsite receptors  Minimise dust, wetting down where required.  Ensure all operatives use specified PPE.  Good hygiene  Induction training.  Controlled site access.	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
PFAS & potential TPH compounds associated with contaminated soils & groundwater	Underlying soils & groundwater	Contamination of underlying soils / groundwater	Migration through ground to underlying soils / aquifer	Medium Risk already present	Medium	Medium	Effect of contamination on soils & groundwater	Soils are generally not being excavated during the PRB installation..  Any excavated surface soils will be put onto existing hardstanding or engineered containment system  Groundwater not being removed	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
PFAS & potential TPH compounds associated with contaminated soils & groundwater	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Low	Medium	Medium	<p>Contamination affecting general public &amp; neighbours.</p> <p>Contamination affecting soils &amp; groundwater / surface waters off-site</p>	<p>All spills of soils to immediately cleaned up</p> <p>Spill kits at hand.</p> <p>Minimise dust. Wet down as required</p> <p>In-situ installation of E-Clay PRB minimises volume of arisings.</p> <p>Induction training.</p> <p>Controlled site access</p> <p>Appropriate bunding</p> <p>No plant leaving site during works</p> <p>All plant cleaned prior to leaving site</p> <p>VOC &amp; headspace monitoring</p> <p>Odour monitoring</p>	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Liquid chemical reagents associated with treatment process (spillages or leakage)	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact & ingestion of liquids and inhalation of vapours.	Medium	Medium	Medium	Short- & long-term health effects	Ensure all operatives use specified PPE. COSHH & induction training. Site induction Tool box talks Spill kits available (bentonite or absorbent mats) Correct labelling of products. Provision of site security and secure storage. 110% bund for controlled chemicals Suitable chemical transfer containers (with lids and less than 10litre) Controlled site access	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Liquid chemical reagents associated with treatment process (spillages or leakage)	Underlying soils & groundwater	Contamination of underlying soils / ground water	Migration through ground to underlying soils / aquifer	Medium	Medium	Medium	Effect of contamination on soils & groundwater	Use of Engineered Containment System (ECS) or use of bunds (110% capacity) for specific IBC's.  COSHH & induction training.  Spill kits available (bentonite or absorbent mats)  Provision of site security and secure storage.  Suitable chemical transfer containers  Site induction  Tool box talks	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Liquid chemical reagents associated with treatment process (spillages or leakage)	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Low	Medium	Medium	<p>Contamination affecting general public &amp; neighbours.</p> <p>Contamination affecting soils &amp; groundwater off-site</p>	<p>Spill kits at hand</p> <p>Treatment Area located away from site boundary</p> <p>Limited amount of plant entering / exiting Mobile Plant Area during operational works.</p> <p>Clean all vehicles before leaving site, mobile plant remains on site during works, deliveries outside treatment area.</p> <p>Store all chemicals away and use at a safe distance from site boundary.</p> <p>Use of ECS.</p> <p>E-Clay production to undertaken away from site boundary.</p>	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Powder chemical reagents associated with treatment process.	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact, ingestion and inhalation of powders / dusts	Medium	Low	Low	Short- & long-term health effects	Minimise dust, wetting down where required. Ensure all operatives use specified PPE. COSHH & induction training. Correct labelling of products. Implementation of site security and containerised storage. Heras fencing. Site induction Tool box talks	Low
	Underlying soils & groundwater	Contamination of underlying soils / ground water	Migration through ground to underlying soils / aquifer	Medium	Low	Low	Effect of contamination on soils & ground water	Use of ECS. Powder reagents low risk environmentally Implementation of site security measures.	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Powder chemical reagents associated with treatment process.	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Medium	Low	Low	Environmental risks from contamination are low – nuisance risk only	<p>Large distance to site boundary minimises risk.</p> <p>Minimise dust, wetting down where required.</p> <p>Treatment Area located away from site boundary</p> <p>Monitoring dust using TSI Dust Trak</p> <p>Clean all vehicles before leaving site, mobile plant remains on site during works, deliveries outside treatment area.</p> <p>Store all chemicals away and use at a safe distance from site boundary.</p> <p>Site induction</p> <p>Tool box talks</p>	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Daughter products resulting from mixing treatment reagents	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact, ingestion and inhalation of E-Clay slurry / vapours.	Low to medium	Low	Low	No daughter products produced other than E-Clay.  E-Clay is non-hazardous / non-toxic	Ensure all operatives use specified PPE.  Undertake induction training.  COSHH & induction training.  Site induction  Tool box talks	Low
	Underlying soils & groundwater	Contamination of underlying soils / ground water	Migration through ground to underlying soils / aquifer	Medium	Low	Low	No daughter products produced other than E-Clay.  E-Clay is non-hazardous / non-toxic	Use of ECS  Spillage will be cleaned up immediately	Low
	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Medium	Low	Low	No daughter products produced other than E-Clay.  E-Clay is non-hazardous / non-toxic	Spill kits at hand  Treatment Area located away from site boundary  Clean all vehicles before leaving site.  Undertake induction training.  PRB installation to be undertaken at site boundary. Requisite controls in place to prevent off site impacts  Site induction  Tool box talks	Low



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Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Products resulting from treatment process	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact, ingestion and inhalation of treated soils & dusts.	Low to medium	Low	Low	Post treatment soils are wet minimising potential for dust.  Treated materials lower risk.	Dust & odour monitoring.  Ensure all operatives use specified PPE.  Site induction  Tool box talks	Low
	Underlying soils & groundwater	Contamination of underlying soils / ground water	Migration through ground to underlying soils / aquifer	Medium	Low	Low	Treated material reduced mobility of pollutants.	Use of ECS.  Induction training.	Low
	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Medium	Low	Low	Treated materials lower risk.  Nuisance risk	Large distance to site boundary minimises risk.  Spill kits at hand  Treatment Area located away from site boundary  Clean all vehicles before leaving site.  Undertake induction training.  Controlled site access.  Site induction  Tool box talks	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Refuelling machines & plant	<ul style="list-style-type: none"> <li>• Site operatives,</li> <li>• general public,</li> <li>• site visitors &amp;</li> <li>• adjoining properties</li> </ul>	Human health issues	Contact & ingestion of liquids and inhalation of vapours.	Low to medium	Medium	Medium	Short- & long-term health effects	Ensure all operatives use appropriate PPE. COSHH & induction training. Correct labelling of products. Use of bunded bowser Use correct refuelling equipment. Spill kit available.	Low
	Underlying soils & groundwater	Contamination of underlying soils / ground water	Migration through ground to underlying soils / aquifer	Medium	Medium	Medium	Effect of contamination on soils & ground water	Use of bunded bowser COSHH & induction training. Use drip trays. Spill kit available.	Low
	Off-site receptors	Contamination to offsite receptors	Migration across / off site.	Medium	Low	Low	Contamination affecting general public & neighbours.	All fuel storage / refuelling to be undertaken in designated area away from site boundary COSHH & induction training. Spill kit available.	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Refuelling machines & plant	All receptors	Environmental & health risks	FIRE	Medium	Medium	Medium	Risk of fire during storage and fuelling with flammable liquids	Use correct equipment. Safe storage of fuel. Strict no smoking policy. Firefighting equipment available. Induction / training Spill kits available	Low

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Fire / explosion	All receptors	Environmental & human health risks	FIRE	Negligible	Medium	Medium	No risk associated with release of flammable gases	If probability changes. Operative to use air monitoring devices which measure LEL/O2/CO/H2S	Negligible
Gas release	Site workers	Serious injury / death	Air	Negligible	Medium	Medium	Risk of asphyxiation due to diminished oxygen	If probability changes; Operative to use air monitoring devices which measure LEL/O2/CO/H2S.  No operative to enter unventilated confined spaces	Negligible

New Inn Fire Station – Deployment Form Supplementary Information

Source	Receptor	Harm	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Justification for Magnitude	Risk Management	Residual Risk
Noise generated during mobilisation, onsite works and demobilisation	<ul style="list-style-type: none"> <li>• Site operatives and</li> <li>• site visitors.</li> </ul>	Human health issues	Proximity exposure	Medium	Low	Low	Risk of hearing damage or nuisance due to elevated noise levels	Use specified PPE as determined on site. Ongoing noise monitoring. Consider alternative equipment. Site induction Tool box talks	Low
Noise generated during mobilisation, onsite works and demobilisation	<ul style="list-style-type: none"> <li>• General public and</li> <li>• neighbours (off-site receptors)</li> </ul>	Human health issues	Proximity exposure	Low	Low	Low	Magnitude and consequence of risk to offsite receptors low due to distances involved.	Ongoing noise monitoring. Consider alternative equipment. Work within agreed working hours. Mobile plant situated away from site boundary. Consider acoustic damping to fencing if noise problematic Site induction Tool box talks	Low

**B8 – Pollution Control.**

**B9 - Emission Monitoring Plans.**

**B10 - Record Keeping.**

These are covered in the following Site-Specific Environmental Risk Assessment.

**Requirement of Envirotreat under Schedule 1 of the Mobile Treatment Licence.**

1. Specified Waste Management Activities

*It is proposed that this deployment covers the installation of the E-Clay Permeable Reactive Barrier as shown in Figure 2 above.*

2. Agreement of the deployment form and supporting Information

*Envirotreat recognise that the works must not begin until confirmation NRW has been received.*

*The remediation works shall be carried out in accordance with an agreed Remediation Strategy and Method Statement, the application submitted in support of this MTL, the agreed deployment form and the conditions of this licence.*

*It is anticipated that the works will take up to 3 weeks and will be continuous.*

3. Changes to the deployment form requiring prior consent by NRW

*Envirotreat will inform NRW of any changes to the remediation plan prior to implementation.*

4. Permitted quantities of contaminated material, substances or products

*The PRB soil treatment volume is approximately 400 m3.*

**Staffing and understanding of requirements of licence conditions**

5. Minimum staffing and supervision

*The Project Manager or nominated alternative person, will be present on site at all times. They will be suitably trained and fully conversant with the requirements of the MTL, the deployment form and MTL application regarding; contaminated material, substances or products acceptance and control procedures, operational controls and environmental monitoring, maintenance, record-keeping, emergency action plans and notifications to NRW.*

*They will be fully supported and resourced by the Envirotreat Solutions team and Helen Davies-Pye DofB 21/07/1977) – Technically Competent Person (WAMITAB – see attached certification)*

6. Availability of licence and deployment form

*The completed approved Deployment will be kept onsite for the duration of the works.*

7. Understanding of licence and deployment form

*All staff will work under the direct supervision of the Project Manager or nominated person, who is fully conversant with those aspects of the licence conditions and deployment form which are relevant to their duties.*

8. Attendance of technically competent persons

*A site diary will be maintained logging all site visitors and onsite actives. The TCM will be attendance at least once per week.*

9. Changes in technically competent persons

*All changes to Technically Competent Person (Helen Davies-Pye ) will be notified to NRW.*

10. Notification of relevant convictions

*Notify accordingly*

11. Notifications of appeals against convictions

*Notify accordingly*

12. Notification of change of operator's or holder's details

*Notify accordingly*

13. Notification of preparatory works

*At least 7 days prior notice will be given prior to commencement of preparatory works.*

14. Cessation and resumption of treatment processes

*In the event of unplanned treatment ceases for longer than 21 days NRW shall be informed prior to re-commencement.*

15. Removal of residual contaminated material, substances or products from operating site

*In the event the treatment operations on the site cease and they are not resumed within 1 month, all plant on the site will be decontaminated. In addition, all waste resulting from the decontamination process will be removed from site within 7 days.*

16. Notifications and submissions to NRW

*To be undertaken accordingly*

17. Provision and maintenance of containment and drainage systems

*Potentially polluting materials will only be deposited, stored, treated or otherwise handled in an area of the site where an engineered containment and drainage system has been provided for that area which meets the required standards (see above for details).*

*The engineered containment and drainage systems will be designed, constructed, inspected, validated and maintained, and shall be fully documented (site specific Quality Plan) and recorded, to be fit for purpose and meet the required standards.*

18. Provision of mobile treatment plant identification board

*An Identification Board will be provided at or near the operating site entrance. The board will display the following information; Operating site name and address, Operator name (company name). Licence number, Emergency contact name and telephone number, Statement that the remedial action is licensed by NRW, NRW national numbers, for General Enquiries (0300 065 3000) and Emergencies (0300 065 3000), or as subsequently notified in writing by NRW and Operational hours for licensed activities.*

19. Operating site security

*Overall site security will be provided by the Principal Contractor (Speller Matcelfe).*

*Additional security in terms of anti-climb fencing and secure lockable storage units will be maintained by Envirotreat, all details will be recorded in site specific Quality Plan.*

*The site benefits from 24 hour security and a secure, gated, controlled entrance. The Treatment Area will be suitably fenced off using 1.5m high anti-climb fencing; all liquid chemicals will be stored in a secure storage unit.*

20. Prevention of mud and debris on road

*See Environmental Risk Assessment.*

21. Remediation of mud and debris on the road

*In the event that mud or debris arising from the operating site is deposited onto public areas outside the operating site, the following remedial measures must be implemented immediately. The affected public areas outside the operating site will be cleaned. Traffic will be isolated from sources of mud and debris within the operating site to prevent further tracking of mud and debris, and measures must be taken to clear any such sources as soon as practicable.*

**Potentially polluting leaks and spillage of contaminated material, substances or products**

22. Potentially polluting leaks and spillage from vehicles, plant and equipment

*See Environmental Risk Assessment.*

23. Potentially polluting leaks and spillage from skips, drums and other mobile containers

*See Environmental Risk Assessment.*

*In addition, a Lifting Plan will be followed to ensure the safe / correct loading / unloading and movement of chemicals on site.*

24. Control and remediation of leaks and spillage

*See Environmental Risk Assessment.*

25. Prohibition of fires

*No fires will be permitted on site.*

## 26. Actions to be taken in the event of a fire

*See Environmental Risk Assessment.*

## 27. Contaminated material, substances or products acceptance and control procedures

*All contaminated material, substances or products must be received, inspected, accepted or rejected, handled, kept, dispatched and recorded in accordance with the standards specified below and recorded in the site-specific Quality Plan.*

*Prior to installation of the E-Clay Permeable Reactive Barrier, a series of trial pits will be excavated to determine*

- *Depth of underlying impermeable layer for barrier installation (PRB installation)*
- *Nature of contamination, i.e., is it as anticipated? (PRB Installation). Samples with been taken (3No.) and tested accordingly*
- *The removal of any obstructions (PRB Installation), if applicable*

*Quarantine storage and rejection of contaminated material, substances or products - Any items of non-permitted contaminated material, substances or products which are detected after acceptance at the operating site will be placed immediately in a designated quarantine storage area. All waste in the quarantine area must be kept segregated from other contaminated material, substances or products which are or are likely to be incompatible. Quarantined wastes will be removed from site or treated within 7 days. A record will be kept in the site specific Quality Plan of all rejected wastes.*

*A Quarantine Area near the Mobile Plant will be set aside for placed non-compliant material (circa capacity 250 m<sup>3</sup>). Provision will be made to placing part of the site in quarantine (if the material cannot be safety moved), with suitable signage / fencing.*

**Process plant and equipment**

## 28. Commissioning, operating and maintenance

*All process plant and equipment used under the MTL will be commissioned, operated and maintained, and must be fully documented and recorded within the site specific Quality Plan.*

## 29. Means of measurement

A full record / log of will be maintained covering;

- *Operational dates.*
- *Daily checks of plant / equipment*
- *Defects / maintenance / repairs requirements*
- *Barrier (Length & Depth installed)*
- *Quantity of E-Clay produced / used.*
- *Chemical Usage and daily stock take.*
- *In process QA / QC checks.*

- *Any non-compliances and corrective action taken.*

30. Treatment of contaminated material substances or products with specified hazardous properties or forms.

*The PRB installation is carried out in-situ therefore the potential for dust / VOCs is low, however comprehensive monitoring of dust, odours and VOC's will be undertaken as per the requirements of the MTL.*

31. Pollution abatement provisions

*No vapours, gases and aerosols from the treatment process are anticipated.*

32. Emissions Monitoring - Groundwater, Surface Water, Soil Gas and Emissions to Air

*The environmental monitoring regime is specified in the Environmental Risk Assessment and covers:*

- *Baseline monitoring results*
- *Trigger levels for indicator parameters*
- *The construction of the monitoring points*
- *The location of the monitoring points*
- *Monitoring protocols*
- *Frequency of monitoring*
- *Experience and qualifications of personnel carrying out monitoring and the personnel responsible for interpreting and acting upon the results of monitoring.*

33. Emissions action plan

*In principle the **Emissions Action Plan** states that all ongoing works will be suspended until it can be ensured that the emissions will not exceed the specified trigger levels specified. All exceedances will be recorded and published accordingly*

34. Keeping and maintenance of records:

*A record of the emissions monitoring and sampling results will be kept and maintained in the site-specific Quality Plan*

35. Submission of records

*These will be included in the Validation Report*

36. Monitoring and control of aerial emissions of dusts, fibres, particulates, bioaerosols, VOCs and odours

*See Environmental Risk Assessment.*

37. Monitoring and control of pest Infestations, scavengers and litter

*See Environmental Risk Assessment.*

38. Control of noise

*See Environmental Risk Assessment.*

**Operating Site records**

**Security and availability of records**

39. Security of records

*All records which are required to be made under the conditions of this licence and the deployment form will be maintained and kept secure from loss, damage or deterioration for a period of 2 years.*

40. Availability of records

*These will be held onsite during the remediation works and in the Envirotreast main office following completion of the works.*

41. Recording of contaminated material, substances or products accepted, treated or removed

*These will be recorded within the site-specific Quality Plan and / or Validation Report*

42. Summary records of contaminated material, substances or products accepted and removed and materials remediated

*These will be recorded within the site-specific Quality Plan and / or Validation Report*

43. Site diary

*On site activities will either be recorded in a written site diary or the site-specific Quality Plan and will cover the following items.*

- *construction work*
- *maintenance*
- *breakdowns*
- *emergencies*
- *Audits (client and / or internal)*
- *problems with contaminated material, substances or products treated, received and action taken*
- *operating site inspections and consequent actions carried out by the operator*
- *technically competent management attendance on the operating site: the date and the time onto the operating site and the time left operating site*
- *severe weather conditions*
- *complaints about authorised operations and corrective actions*
- *environmental problems and remedial actions.*

## **Envirotreast Environmental Risk Assessment**

### **Section 1 - The Envirotreast Process, Characterisation of Risk Source**

A site-specific risk assessment has been completed for the Pontypool site to determine the potential environmental hazards and risks associated with application of the proposed remediation technology. The risk assessment has been completed in accordance with the requirements set out in “Standard rules SR2008No27 - mobile plant for the treatment of soils and contaminated material, substances or products” and Schedule 1 of the Conditions relating to our Mobile Treatment Permit.

The hazards have been identified as those associated with application of the Envirotreast process at the Site. The risks are those of pollution to the environment, including harm to human health or serious detriment to local amenities outside the boundary of the site and its containment.

The site-specific risk assessment has been undertaken to identify and prioritise the measures that need to be taken to comply with the relevant statutory provisions. The mitigating measures applied are those that need to be implemented in order to comply with the required legislation.

**Tables 5 and 6** are an indication of the potential hazards that should be taken into consideration during application of the technology / process at the Site. The potential sources, pathway and target receptors have also been identified.

**Table 7**, shows the allocation of a scoring system determining the environmental risks identified during and after application of the technology / process.

The likelihood or frequency of occurrence of each hazard is indicated in Column 1.1 and 2.1. The magnitude or seriousness of the consequences of the hazard occurring has been given a similar score and is illustrated in Columns 1.2 and 2.2. The previous two scores are combined to give a measure of the potential risks posed and illustrated in Columns 1.3 and 2.3. Finally, the risks identified require certain controls and therefore management. Columns 1.4 and 2.4 illustrate reduced scores as a result of the management controls in place. Scores are provided during the treatment operation and on completion. The scoring system as indicated in Table 2 has been modelled on remediation projects carried out to-date, and re-evaluated in light of site-specific issues at the Site.

The scoring system is as follows: -

- **N**      **Negligible Risk**
- **L**      **Low Risk**
- **M**      **Medium Risk**
- **H**      **High Risk**

**Table 8**, identifies the risks to human receptors (on-Site and off-Site) from gaseous emissions to air from chemical reagents used during application of the Envirotreast process.

**Table 9**, identifies the risks to human receptors (on-Site and off-Site) from emissions to air from dry materials used during application of the Envirotreast process.

**Table 10**, identifies the risks to human receptors (on-Site and off-Site) from gaseous emissions to air from the contaminants of concern identified from the Site Investigation data and Quantitative Risk Assessment.

**Table 11**, allocates a scoring system determining the risks to human health (site operatives) from emissions to air identified during and after application of the Envirotrete process before and after implementation of controls.

**Table 12** allocates a scoring system determining the risks to human health (visitors and general public) from emissions to air identified during and after application of the Envirotrete process before and after implementation of controls.

**Table 13** Allocates a Scoring System Determining the Risks to Human Health (Site Operatives and General Public) from Emissions to Air Identified During and After Application of the Envirotrete process Before and After Implementation of Controls.

The scoring system is as follows: -

- **N**      **Negligible Risk**
- **L**      **Low Risk**
- **M**      **Medium Risk**
- **H**      **High Risk**

The scoring system has been carried out by suitably qualified and experienced personnel including representatives from management and supervisory staff and based on an assessment of each operation carried out during the remedial works. When determining the levels of risk, decisions have taken into account the potential source, pathway and receptor for each operation and process reagent / material. In particular we have considered levels of volatility (chemical reagents & contaminants of concern), likely levels of dust production (dry materials), potential spillages, distance from the treatment zone to the receptor etc.

The risks to site operatives have been deemed worst case in comparison to the effects to site visitors and the general public etc.

Table 5 - Identification of potential hazards: Pathways and Receptors

Source and hazard	Pathway	Receptor
Mud & debris	Overland	Site operatives General public / neighbours Off-site receptors Site visitors
Plant & equipment – noise	Direct to	Site operatives General public / neighbours Off-site receptors Site visitors
Potentially polluting leaks, spillages & aerial emissions. Waste & general spillages	Migration to underlying soils / waters. Migration via groundwater. Migration Overland	Groundwater / underlying matrix Surface waters Off-site receptors
Remediation chemical reagents – potential spillages	Migration to underlying soils / waters Migration via groundwater Migration Overland	Groundwater / underlying matrix Surface waters Off-site receptors
Migration of contaminated ground & surface water / leachate	Migration to underlying soils / waters Migration via groundwater Migration Overland	Groundwater / underlying matrix Surface waters Off-site receptors
Remediation reagents – dry materials	Airborne Migration to underlying soils / waters Migration via groundwater Migration Overland	Groundwater / underlying matrix Surface waters Site operatives General public / neighbours Off-site receptors Site visitors
Remediation reagents – leakage or accidental release (e-clay slurry)	Overland Migration to underlying soils / waters Migration via groundwater Migration Overland	Groundwater / underlying matrix Surface waters Off-site receptors

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Table 6 - Identification of potential hazards: Pathways and Receptors [continued].

Source and hazard	Pathway	Receptor
Waste – Potential VOCs / PFAS compounds	Airborne	Site operatives General public / neighbours Off-site receptors Site visitors
Plant or waste – fire / explosion	Overland	Site operatives General public / neighbours Offsite receptors Site visitors
Waste – generation of dust	Airborne	Site operatives General public / neighbours Offsite receptors Site visitors
Waste – generation of odours	Airborne	Site operatives General public / neighbours Offsite receptors Site visitors
Pests / birds & other scavengers / litter	Overland	Site operatives General public / neighbours Off-site receptors Site visitors

Table 7 - Allocation of a scoring system determining the environmental risks during and post application of the remediation purposes.

	During Treatment				After Treatment			
	1.1 Probability of occurrence	1.2 Magnitude of consequence	1.3 Level of risk before controls	1.4 Level of risk with control s in place	2.1 Probability of occurrence	2.2 Magnitude of Consequence	2.3 Level of risk before controls	2.4 Level of risk with controls in place
Mud & debris	M	M	M	N	L	M	M	N
Plant & equipment – noise	M	M	L to M	L	N	N	N	N
Potentially polluting leaks, spillages & aerial emissions – Waste & general spillages	M	M	M	L	N	N	N	N
Chemical reagents – potential spillages	M	M	M	L	N	N	N	N
Migration of contaminated groundwater / leachate	L	M	M	L	N	N	N	N
Remediation reagents – dry materials	M	L	L	L	N	N	N	N
Remediation reagents – leakage or accidental release	M	M	M	L	N	N	N	N
Waste - VOC emissions	L to M	M	M	L to N	N	N	N	N
Plant & Waste – Fire & explosion	L	H	L	N	N	N	N	N
Waste – generation of dust	M	M	M	L to N	N	N	N	N
Waste – generation of odours	L to M	H	L	L	N	N	N	N
Pests / birds & other scavengers / litter	M	M	L	N	N	N	N	N



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Table 8 - Identification of risks to Human Receptors (on-site and off-site) from gaseous emissions to air from chemical reagents used during application of the remediation processes.

Parameters	Envirotrete 'A'	Envirotrete 'B'	Envirotrete 'C'
Relative Volatility	Medium	Low	Low
Occupational Exposure Limit	10 mg/m <sup>3</sup> over an 8 hour period	2 mg/m <sup>3</sup> over an 8 hour period	1 mg/m <sup>3</sup> over an 8 hour period
Storage	Intermediate Bulk Containers (IBC's) (1000 litre capacity) Placed on bund (110%)	205 litre drums	25 litre pails Placed on bund (110%)
Transportation on-site	Forklift / telehandler		
Dispensing into measuring receptacle	Controlled tap to closed transfer container at ground level	Manual dispenser pump to closed transfer container	Controlled tap to closed transfer container at ground level
Carriage	< 3 m from storage to mixer unit in suitable container		
Dispensing into mixer units	Controlled pouring into grout (paddle) mixer		
Slurry mixing operation	Water soluble		
Pumping to application area	Slurry is contained within pipe and reagents are absorbed within E-clay slurry matrix		
<i>In-situ</i> mixing	<p><i>In situ</i> applications require addition of E-Clay slurry direct to PRB installation location and mixing in-situ (with minimal excavation). Liquid chemicals once incorporated into the bentonite, associated risk with odour production is negligible. Following treatment, the risk associated with odour production is negligible.</p>		
Post remediation	No further disturbance of soils.		

Envirotrete 'C' may not be required based on contaminants of concern

Table 9 - Identification of risks to Human Receptors (on-site and off-site) from emissions to air from dry materials used during remediation processes.

Parameters	Bentonite & Cement
Volatility	Not applicable (insoluble powders)
Occupational Exposure Limit (based of the lowest OEL's)	10 mg/m <sup>3</sup> total inhalable dust over an 8 hour period; 4 mg/m <sup>3</sup> respirable dust over an 8 hour period
Storage	25 kg paper bag with waterproof lining, pallets covered with plastic sheeting.
Transportation on-site	Forklift / telehandler to treatment area
Dispensing into measuring receptacle	Not applicable (insoluble powders), added direct (whole bags = 25 Kg)
Carriage	< 1m from storage to mixer unit unopened
Dispensing into mixer units	Bags opened with knife, controlled dispensing into mixer unit or mixer skip
Slurry mixing operation	Water suspension
Pumping to mixing zone	Slurred is contained within pipe and materials are absorbed within E-clay slurry matrix. Cement is added direct to treatment area, caution required to avoid creating dust
In-situ mixing	<i>In situ</i> applications require addition of E-Clay slurry direct to barrier installation area and mixing in-situ (with minimal excavation). Bentonite bags split and content added to grout mixer, possibility of localised dust (inert), operative will be wearing appropriate PPE. Following treatment, the risk associated with odour production is negligible.
Post remediation	No further disturbance of soils.

Table 10 - Identification of risks to Human Receptors (on-site and off-site) from gaseous emissions to air from the contaminants of concern identified from the site investigation data.

Parameters	Hydrocarbons (VOC)	Hydrocarbons (PAH)	Hydrocarbons (TPH)
Relative volatility or dust	Low	Low to Negligible	Low to Medium
In-situ mixing	<p>PRB installed In-situ.                      In-situ application, therefore significantly reduced excavation and therefore exposure pathways.                      Risk from odours is low.                      Risk of dust is low (with proposed control methods)                      Asbestos aware trained operatives                      Experienced on-site Chemist                      All suspect asbestos containing material to be quarantined.                      Following treatment, the risk associated with odour production (and mobility of contaminants of concern) is negligible.                      All operations to be monitored via handheld VOC monitor, action to be implemented in the event of exceedances.</p>		
Post installation	No further disturbance of soil		

Table 11 - Allocation of a scoring system determining the risks to Human Health (*site operatives*) from emissions to air - identified during and post application of the remediation process before and after Implementation of controls.

Parameters	Envirotreat 'A'		Envirotreat 'B'		Envirotreat 'C'		Cement		Bentonite	
	Before controls	After controls	Before controls	After controls	Before controls	After controls	After controls	After controls	After controls	After controls
Relative volatility	M		L		L		N/A		N/A	
Occupational Exposure Limit	M	N	L	N	M	N	M	N	M	N
Storage	N		N		N		N		N	
Transportation on-site	N		N		N		N		N	
Dispensing into measuring receptacle	M	N	L	N	M	N	N		N	
Carriage	M	N	L	N	M	N	N	N	N	N
Dispensing into mixer units	M	N	L	N	M	N	M	N	M	N
Slurry mixing operation	N		N		N		N		N	
Pumping to mixing zone	N		N		N		N		N	
In-situ mixing	N		N		N		N		N	
Post installation	N		N		N		N		N	

- N = Negligible Risk
- L = Low Risk
- M = Medium Risk
- H = High Risk

N/A – not applicable

Envirotreat 'C' may not be required based on contaminants of concern

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Table 12 - Allocation of a scoring system determining the risks to Human Health (*visitors, general public*) from emissions to air identified during and after application of the remediation processes before and after implementation of controls.

Parameters	Envirotrete 'A'		Envirotrete 'B'		Envirotrete 'C'		Cement		Bentonite	
	Before Control	After Control	Before Control	After Control	Before Control	After Control	Before Control	After Control	Before Control	After Control
Relative Volatility	M		N		N		N/A		N/A	
Occupational Exposure Limit	N	N	N	N	N	N	L	N	L	N
Storage	N		N		N		N		N	
Transportation on-site	N		N		N		N		N	
Dispensing into measuring receptacle	N		N		N		N		N	
Carriage	N		N		N		N		N	
Dispensing into mixer units	N		N		N		N		N	
Slurry mixing operation	N		N		N		N		N	
Pumping to mixing zone	N		N		N		N		N	
In-situ mixing	N		N		N		N		N	
Post installation	N		N		N		N		N	

*Envirotrete 'C' may not be required based on contaminants of concern*

Table 13 - Allocation of a scoring system determining the risks to Human Health (*site operatives and general public*) from emissions to air identified during and after application of the remediation process after implementation of controls.

	Inhalation		Ingestion		Skin Contact		Eye Contact		Controls / PPE Req.	
	Site Operatives	General Public	Site Operatives	General Public	Site Operatives	General Public	Site Operatives	General Public	Site Operatives	General Public
Bentonite	M	L	L	N	N	N	L	N	YES	NO
Cement	M	L	L	N	M	N	M	N	YES	NO
Env 'A'	L	N	L	N	M	N	M	N	YES	NO
Env 'B'	N/A	N/A	L	N	L	N	M	N	YES	NO
Env 'C'	N/A	N/A	L	N	M	N	M	N	YES	NO

N.B. The scoring system has been based on the hazardous nature of each of the chemicals / materials.

Envirotreant 'C' may not be required based on contaminants of concern

### 1.1 - Control of Mud and Debris Arising from Application of the Envirotreast Process

The control and prevention of mud and debris from being transported off-site during application of the Envirotreast process will be dependent upon a number of factors. These include the weather and / or the amount of traffic and personnel travelling across the site. The level of risk for movement of mud and debris off-site is **medium** during the remediation and **negligible** following completion (refer to Table 7 above) for the reasons stated below: -

- The barrier installation will be carried out in-situ, this will negate the bulk excavation of soils. Strict housekeeping protocols will be required to minimise mud on-site, this in turn will minimise the risk of off-site contamination. All onsite plant and personnel will be required to cross a decontamination zone prior to leaving site. All plant / equipment to be cleaned prior to leaving site.
- All operations regarding the treatment process will be carried out within a designated Treatment Area. Therefore, all mud and debris arising from the treatment operation will be contained within the Treatment Area and will not be transported off-site.
- There will be little or no movement of plant or equipment off-site for the project duration.
- Imported materials including bentonite and chemical reagents will be delivered and off-loaded in the vicinity of the site entrance and moved around the site internally via an excavator or forklift. The procedure will not require import vehicles to have contact or even access to the treatment zone.

### 1.2 - Control and Monitoring of Noise – Plant & Equipment

Noise during application of the technology / process may originate from groundwork vehicles, the batching plant and / or any vehicles delivering materials to the site.

Receptors at risk are site operatives and the local community.

The impact to onsite receptors from noise will be **medium** from plant and equipment operating on site with appropriate control measures in place (appropriate PPE will be utilised reducing risk to be **low**). There will be **low** impact to offsite receptors due to the extended distances involved between any onsite operations and nearest receptors. In addition, there will be a **negligible** impact on receptors from noise during delivery of materials to the site for the reasons stated below: -

- The delivery process is not generally noisy and will only occur during sociable working hours (i.e. 08:00 – 17:00).
- The impact of construction site vehicles on the surrounding road network has been considered.
- All operators will be provided with a traffic route indicating
  - hours of operation.
  - proposed traffic route.
  - appropriate speed limits.

- identified hazards.
- waiting areas.

**NON-COMPLIANCE WITH THE AGREED TRAFFIC PLAN WILL RESULT IN A WARNING.**  
**REPEAT OFFENDERS WILL BE BANNED FROM SITE**

- Deliveries will only be permitted at designated access points for operational vehicles with agreement from the Principal Contractor

## **Section 2 - Potentially Polluting Leaks, Spillages and Aerial Emissions from Application of the Envirotreast Process.**

### 2.1 - Waste – Spillage

Potential receptors for spillages are the groundwater, the underlying soil matrix, surface run-off, site operatives & the local community. On the basis that the E-Clay preparation works will be undertaken within the confines of a suitable constructed ECS, the perceived risk to the surrounding environment is with appropriate control measures in place and **negligible**.

Minimal arising will be generated during the barrier installation works, it is proposed that these are stockpiled site side of the barrier excavation during barrier installation.

### 2.2 - General Spillages On-Site

As with the spillage of waste on-site, the identified receptors are the underlying site, operatives & offsite receptors.

The risk to the surrounding environment is **medium** during the remediation works, however reducing to **low** with appropriate control measures in place for the reasons stated below:-

- All maintenance and refuelling of plant and equipment on-site will be carried out by trained personnel within a designated area using drip trays.
- All spillages will be dealt with immediately using absorbent material and incorporated with the material for treatment.
- Diesel fuel will be stored within a self-contained bowser. The spillage capacity will be 110% of the maximum volume of diesel stored within the bowser.
- Regular maintenance checks of plant and equipment will be carried out daily to prevent leaks, etc occurring.
- All storage and operation to be undertaken at a suitable distance from the site boundary.

### 2.3 - Chemical Reagents - Potential Spillages

There is a perceived risk to the surrounding environment from the spillage of chemical reagents during delivery, the mixing process and / or via damaged or leaking pipe-work.

The potential receptors identified include site operatives, the groundwater, the underlying soil matrix, surface run-off to offsite receptors, site operatives & the local community.

The risk to the surrounding environment is **medium** during the remediation works, however reducing to **low** with appropriate control measures in place for the reasons stated below:-

- Delivery of reagents will generally be in the form of Intermediate Bulk Containers (IBC's) 1,000 litre, 205 litre drums, and 25 kg carboys. All chemicals will be stored in their original containers located on-site within the secure compound.
- Any leaks or spillages will be contained within the bunded area and can be used within the slurry mixers and incorporated for the next batch of treatment slurry. Bentonite will be available to act as a spill absorbent. All leaks and spillages will be addressed as soon as practically possible but within a 24 hour period.
- The prevention of spillages during the chemical reagent addition process will be achieved by the use of closed containers, spouts for pouring and that a clear path is maintained at all times between the chemical store and the mixer units.
- The general condition of engineered containment system and general condition of chemical reagents will be inspected on a daily basis so that any damage can be identified and repaired.
- The authority to deal with spilt waste or chemical reagents will only be given to trained personnel.
- All storage and operation to be undertaken at a suitable distance from the site boundary.

The potential risk from spillages during the delivery and off-loading process is deemed to be of **low** risk for the reasons stated below: -

- All deliveries will be off-loaded with a forklift operated by trained and qualified personnel only in accordance with the site specific Lifting Plan.
- Off-loading of chemicals will be supervised by the Site Supervisor. All precautions will be taken to ensure the chemical IBC's / drums are handled carefully.
- Absorbent materials (i.e. Bentonite) will be provided should a spillage occur. This material will be contained within a waste skip for disposal at a suitable location.

### 2.4 - Chemical Reagents - Emissions to Air

Potential risks to human health from aerial emissions of chemical reagents from each stage of the Envirotreast Process are perceived to be **low** following implementation of control measures (to include PPE).

The surrounding environment and the general public will not be at risk from the treatment operation due to the relatively low volatility of the chemical reagents. If monitoring determines,

then the security fencing around the Treatment Area will have anti dust mesh fitted to minimise possible windage of bentonite dust.

Should emissions to air become an issue Envirotreat personnel have the authority to cease operations until the issue is addressed.

#### 2.5 - Migration of Contaminated Ground and Surface Water / Leachate

The potential pathway for migration of contaminated ground and surface-water, and / or leachate off-site is through the underlying base and across land to the site boundary. The migration of contaminants off-site as a result of the treatment process via the above pathways is perceived to be **medium** during the remediation works, however reducing to **low** with appropriate control measures in place for the reasons stated below:

- Where groundwater is encountered it will be used during the treatment operation as a substitute for mains water.
- Any arising from the barrier installation / source treatment will be dealt with daily. Once the contaminated soils come into contact with the treatment slurry the contaminants are bound within the treated matrix preventing leaching to the groundwater bodies.
- All surface soils not part of the PRB will be chemically stabilised to reduce pollutant mobility.

#### 2.6 - Remediation Reagents – Dry Materials

Possible receptors from dust production include site operatives and members of the local community (refer to Table 5). The risk of pollution from dust production to off-site receptors during the delivery and use of dry materials is perceived to be **low** (refer to Table 7) following implementation of control measures for the reasons stated below: -

- Bentonite is delivered in 25 kg bags. The bentonite bags are split and emptied carefully in the mixer units.
- PPE in the form of dust masks / hoods will be worn by site personnel working in the vicinity of the treatment zone.
- If determined by monitoring, the security fencing around the Treatment Area will have anti dust mesh fitted to minimise possible windage of bentonite dust.
- Dust monitoring will be undertaken and if deemed necessary dust suppression in the form of screens and / or misting units will be utilised if dust becomes a problem on-site.

During treatment, the risk from dust production is perceived to be of **medium** risk to site operatives (this risk will be reduced to **low** with appropriate PPE), but **negligible** to members of the local community due to the distance from the treatment zone and other control measures.

### 2.7 - Remediation Reagents - Leakage or Accidental Release

The potential pathway and receptor from the leakage or accidental release of treatment slurry is through the base into any underlying aquifer. The risk to environmental receptors off-site is perceived to be **medium** during the remediation works, however reducing to **low** with appropriate control measures in place for the reasons stated below:

- All remediation reagents will be stored within a secure fenced area to protect the surrounding environment from the spillage of chemicals.
- All locally used chemical reagents will be within the confines of the ECS.
- The batching plant will be bunded within the Treatment Area again preventing any spillages coming into contact with the surrounding environment.
- Any leaks or spillages will be scraped up and incorporated within the next batch of treatment slurry.
- E-Clay production will be operated at a safe distance from the site boundary.

### 2.8 - Waste – Volatile Organic Compound Emissions

The generation of VOC's and their toxicity to life is dependent upon the type and quantity of contamination on-site. In this case some hydrocarbons are potentially possible, ie TPH from fuel and lubricants. The pathway for the release and transport of VOC's during the remediation works is airborne, and receptors include site operatives, members of the public, neighbours and site visitors.

The risk to potential receptors from the treatment operation is perceived to be **low** to **medium** for site workers with appropriate control measure in place (i.e. constant VOC monitoring, stopping works at threshold).

VOC's will be monitored throughout the treatment by means of handheld gas monitoring equipment (PID). STEL and TWA values for respective VOC's will be used as trigger values. In the event of unacceptable VOC levels, works will stop until the situation can be resolved.

The risk posed to off-site receptors is deemed to be **negligible** due to the relatively large distances between the working area and the site boundary.

**Section 3 - Fires on the Operating Site****3.1 - Waste – Fire / Explosion**

The potential risk of fire from application of the technology / process is negligible for the reasons stated below:

- The nature of the technology and the method and location of application.
- Wastes that are classified as explosive (Special Waste Hazard code H1), are not present onsite.
- Wastes that are classified as highly flammable (Special Waste Hazard codes H3-A and H3-B) are expected to be unlikely at concentrations which may result in a fire on-site within the area designated for the excavation of soils.
- Smoking and the use of naked flames will be prohibited within the treatment zone.
- The emergency procedures for a fire or explosion on-site are detailed in the Fire and Emergency Plan.

## Emergency Procedure – Fires On Site

Speller Metcalfe as Principal Contractor with determine the Emergency Policy for Fires on site.

The following procedure will be adhered to if a fire or explosion occurs on-site:

- ALL fires on-site will be regarded as an emergency and dealt with as such;
- The surrounding area will be vacated immediately.

If the fire can be tackled **SAFELY**, then it will be extinguished using the on-site portable extinguisher and / or water from the site. The extinguishers will be stored in the Site Office for easy access.

ALL personnel will be made aware of the firefighting equipment available and where they are stored. Equipment stored will include at least one of each of the following: a fire extinguisher, a fire blanket and a first aid kit.

Should the fire be successfully extinguished, a constant vigil should be maintained to ensure the fire does not re-ignite. The area should remain vacated until there is no further danger of the fire re-starting.

If the fire cannot be doused, summon the Fire Brigade immediately on determining extent of fire.

Notify security immediately

Clearly state site details as follows:

SITE NAME: New Inn Fire Station  
 SITE ADDRESS: New Road, New Inn Pontypool NP4 0YW  
 EMERGENCY TEL. NO. 999 or 112  
 ALTERNATIVE CONTACT NUMBERS.

- Project Manager TBC
- Envirotrat Office 01384 288876

Where possible move all plant and equipment to a safe distance away from the vicinity of the fire.

Emergency Assembly Point is located at the controlled site access gate.

It is the responsibility of Envirotrat to ensure that relevant training will be given to all personnel on-site on what to do in the event of a fire or explosion and in the use of the firefighting equipment stored onsite.

NRW will be notified as soon as practically possibly if fire occurs on site. Contact No. 0800 807060.

### 3.2 - Plant – Fire / Explosion

Both light and heavy plant and equipment are used to carry out the requisite remediation works. Consequently, there will be a requirement to store fuel on-site, which may pose a fire risk to site personnel and the local community etc. The following control measures will be in place during the works:

- Fuel will be stored on-site within a self-contained bowser. Smoking or the use of naked flames will not be permitted within the storage area.
- Only suitably trained personnel, in accordance with the manufacturer's specifications, will carry out maintenance of plant and equipment.
- The emergency procedures for a fire or explosion on-site are detailed in the Fire and Emergency Plan.

#### **Section 4 - Control, Monitoring and Reporting of Dusts, Fibres and Particulates during the Mixing / Treatment Process**

The generation of dust and particulates on-site and the risk to the surrounding environment will be dependent upon the following parameters: the wind, which will erode and act as a transport mechanism and the general day to day disturbances and whether the soils are damp.

Possible receptors include site operatives, the local community, surface water and local properties. The potential risk is **medium** for site operative particularly those handling cement and bentonite; this will be controlled through handling procedures and use of appropriate dust masks. The potential risk is **negligible** for offsite operative particularly for the reasons stated below:

- On-site vehicle traffic will be kept to a minimum and water will be used to dampen down exposed soils should dust become a problem from the movement of plant and equipment.
- Monitoring of the concentration of airborne dust and particulates will be assessed throughout the day using a TSI Dust Trak Instrument.
- Should dust levels become problematic, dust suppression equipment in the form of misting units will be used.
- If air monitoring indicates, then screens constructed from anti dust mess sheeting covering 2m high Heras fencing will be located around the mixing area. This will prevent the disturbance of the treatment reagents by wind.

## Section 5 - Waste - Generation of Odours

The potential generation of odours on-site is related to the type of waste present. The pathway identified for the transport of odours across the site boundary is through the atmosphere, with potential receptors being site operatives, the public and site visitors. With controls in place, the likely production of odours is perceived to be **low** to site operatives for the reasons stated below:

The soil mixing areas will be undertaken in-situ will minimal arisings;

- Monitoring will be undertaken by site operatives;
- If persistent odour problems occur, the treatment process will be stopped and appropriate measures adopted, ie. use of odour suppression units;

**Section 6 - Monitoring and / or Sampling Programme**

The following parameters were taken into account to determine the monitoring and sampling programmes:

- The contamination identified;
- The design of the remediation system;
- The validation standards required;
- The geology and hydrogeology of the site and surrounding land;
- The presence of local surface water bodies;
- Proximity to potable water supplies;
- Proximity to other receptors.

The remediation strategy to be applied on site is designed to ensure that the risks associated with the identified contaminants of concern are fully addressed in accordance with the quantitative risk assessment.

## Section 7 - Wastes Including Pathogenic Bacteria

Previous site investigation reports have not identified a problem with the presence of pathogenic bacteria on-site.

Consequently, the potential risk to receptors associated with the application of the technology / process for the treatment of contaminated material as identified on the site is **negligible** for the reasons stated below;

- Comprehensive induction process for all site operative covering good personal hygiene, decontamination procedures and Leptospirosis (Weil's Disease).
- Induction training for all site visitors including good personal hygiene, decontamination procedures and Leptospirosis (Weil's Disease).

**Section 8 - Control of Pests**

Potential pests pose a **negligible** risk to site operatives and the local community from application of the technology / process for the reasons stated below: -

- The nature and source of the possible wastes to be treated (i.e. organic, inorganic/ heavy metal wastes) are not regarded as foodstuffs for pests;
- Foodstuffs introduced to site by operatives will be disposed of within appropriate, covered bins;
- In the event that a pest infestation occurs, a pest control contractor will be appointed.

## Section 9 - Control of Birds and Other Scavengers

Birds and other scavengers pose a **negligible** risk during application of the technology / process for the reasons stated below: -

- The nature and source of the wastes to be treated on-site are not regarded as foodstuffs for birds and other scavengers.
- All food and putrescible wastes will be deposited within covered waste bins / skips, to ensure that birds and other scavengers do not become a problem on-site.
- A sealed skip will be utilised for waste generated from the welfare (all welfare waste to be placed in skip daily) and bentonite bags.

**Section 10 - Control of Litter**

The major source of litter from site will be from material bags and as such the risk from litter is **negligible** for the reasons stated below: -

- Litter will be deposited on-site in covered skips;
- Chemical drums and IBC's will be safely stored until arrangements can be made for their collection. Collection of empty drums / IBC's will be arranged as and when required (by a suitable carrier).

**Section 11 - Documentation**

At all times, an up-to-date Project Quality Plan and Health & Safety documentation will be kept at the site office for reference by site personnel. The site will be inspected regularly by the Site Project Supervisor to ensure license compliance.

All records will be made available for inspection by the Local Council and NRW during operational hours.

**Section 12 - References**

The following documents should be consulted as part of these works.

- Health and Safety Risk Assessment and Method Statement (to be prepared)
- Site Specific Quality Plan (to be prepared)
- PRB Design Document by Envirotreast.
- Historical site investigation reports
- Remediation Strategy and Method Statement Prepared by Envirotreast

### **Environmental Monitoring Plan**

Monitoring will be carried out and results interpreted by suitably qualified and experienced Envirotreat personnel. Records of results from all monitoring will be filed in the Project Quality Plan and Site Diary, which will be on-site during hours of operation.

Envirotreat Personnel to Carry out Monitoring:

- Project Site Manager or nominated deputy.
- Technically Competent Person (Helen Davies-Pye).

**Baseline data for dust, noise and VOC will be established prior to the treatment.** Further monitoring will be undertaken daily throughout the remedial works. The monitoring points are as detailed on the site plan. In addition, further monitoring will be undertaken should there be any concerns between routine monitoring intervals.

### **Air Emission Monitoring**

The potential risk from aerial emissions following implementation of control measures is **low** to **negligible** for the following reasons: -

- Regular monitoring of **dust** (via TSI Dust Trak - Real Time Dust Monitor or similar) and
- **VOC** monitoring (via Mini-Rea or similar), and other noxious gases.
- Monitoring of odours (via olfactory observations)
- On-site vehicle traffic will be kept to a minimum and water will be used to dampen down exposed soils.
- The mixing zone will be located as close as is practically possible to the treatment area. Following treatment, the potential for aerial emissions is negligible.

The following baseline monitoring is considered necessary;

- Baseline VOCs will be taken to measure VOCs and other noxious gases resulting from other local activities.
- Baseline noise levels will be taken.
- Baseline Dust will be taken.
- Once remediation work commences monitoring of airborne dust, particulates, VOCs and other noxious gases will be carried out at least twice daily from the area identified in the Remediation Method Statement. The monitoring regime will involve handheld PID equipment, gas monitors and dust monitors, visual assessment of the levels of airborne dust and particulates emanating from the treatment process paying particular attention to the trigger level of dust migrating off-site.

If the trigger level is surpassed then works will be halted pending the following measures to take place, for instance;

- Dust suppression equipment in the form of a water bowser and or misting units will be used.
- VOCs and other noxious gases can be reduced to acceptable levels.

## **Surface Water & Groundwater**

The potential sources of surface / ground water contamination are the chemicals incorporated into the E-clay and leachate & surface water runoff.

Baseline monitoring of soils within the PRB installation area will be carried out to confirm PFAS concentrations at the site boundary.

The chemicals and slurry mixing equipment will be located in the E-clay Treatment Area, away from known sensitive receptors. Any chemical spillages will be contained and collected and incorporated into the treatment process. The whole Treatment Area will be bunded in order to protect the environment.

The objective of this ECS is to protect the surrounding environment from chemical spillages.

The chemicals required for the production of the treatment slurry, will be delivered in Intermediate Bulk Containers (IBCs), 205 L drums and 25 L carboys, which will be stored within a containerised unit, to contain any spillages.

Ongoing (daily) monitoring of the ECS will be undertaken with appropriate maintenance undertaken, this will be recorded in the site diary / site specific Quality Plan.

Following completion of work, the containment area will be removed and ground reinstated.

All surplus materials arising from the decommissioning of the ECS will be disposed of accordingly.

## **Installation and Commissioning**

The commissioning of the Treatment Area ECS will be carried out by a suitably qualified Technically Competent Manager.

As with all projects, a daily inspection of all bunds will be undertaken to ensure their integrity.

The ECS will not be connected to a drainage system; there will however be a number of sumps where any chemical spillages can be pumped from and reused in future treatment slurries. All deliveries to this ECS will be made using a forklift / telehandler.

Following commission, the integrity of the ECS will be monitored on a daily basis. The monitoring regime will consist of a visual inspection with particular attention paid to the action trigger of any loss in integrity of the bund.

If the action trigger is surpassed, the bund will be repaired immediately and recorded in the Project Quality Plan.

Following the conclusion of works, the materials used to create the ECS will be incorporated in the final batch and remediated.

## **Monitoring of Groundwater**

No formal monitoring of groundwater during remediation has been stipulated.

Post E-Clay PRB monitoring / validation will be undertaken by Envirotreast – monthly for 12 months.

**Monitoring of Surface Water**

Afon Lwyd will be monitored upstream and downstream post remediation monthly for 3 months and quarterly thereafter (following liaison with NRW at 3 months).

**Monitoring of Soil Gases**

VOC will be regularly monitored during the works.

**Indicator Parameters**

Aerial Emissions

Indicator	Justification
<p><b>Bentonite and cement particulates released to air.</b></p>	<p>The only potential aerial emissions will originate from the addition of bentonite.</p> <p>This will be evaluated visually and via Real Time Dust Monitor.</p> <p>Control Trigger Level of 100 ug/m<sup>3</sup>, at site boundary (or 2x background level, whichever is greatest).</p> <p>If lower trigger value is obtained (typically 10% of the Control Trigger Level – 90 ug/m<sup>3</sup>) then an assessment will be undertaken as to the cause and appropriate remedial action taken. In the event the Control Trigger Level is exceeded works will STOP until reasons evaluated and alternative method of work approved.</p>

Dust

Indicator	Justification
<p>Dust released to air due to vehicle movements, etc.</p>	<p>A potential source of dust will originate from the movement of site vehicles.</p> <p>This will be evaluated visually and via Real Time Dust Monitor.</p> <p>Control Trigger Level of 100 ug/m<sup>3</sup>, at site boundary (or 2x background level, whichever is greatest).</p> <p>If lower trigger value is obtained (typically 10% of the Control Trigger Level – 90 ug/m<sup>3</sup>) then an assessment will be undertaken as to the cause and appropriate remedial action taken. In the event the Control Trigger Level is exceeded works will STOP until reasons evaluated and alternative method of work approved.</p>

Noise

Indicator	Justification
<p>Noise levels rising significantly (5 dBa) above the baseline levels i.e. road noise, noise from nearby industry / housing / school</p>	<p>The remediation operation is not expected to generate excessive noise beyond the site boundaries, and it is not anticipated that levels will rise above the indicator levels (5 dBa over baseline) for the reasons stated previously. However, should this occur it will cause nuisance to the local community and thus remedial measures will be employed.</p> <p>Noise levels will be monitored by a simple hand held device.</p> <p>Where levels exceed the lower exposure action level of 80 decibels, then ear protection will be provided based on SNR and taking into consideration real world factors.</p> <p>Trigger level of 5 dBa over baseline at site boundary. In the event the Control Trigger Level is exceeded works will <b>STOP</b> until reasons evaluated and alternative method of work approved.</p>

VOC

Indicator	Justification
<p>Any emissions over STEL / TWA. Benzene &gt; 1 ppm</p>	<p>Monitoring throughout the treatment operation by means of hand held monitor (PID).</p> <p>Tigger level of equivalent to 1 ppm benzene at site boundary.</p> <p>In trigger value exceeded works will STOP until reasons evaluated and alternative method of work approved</p>

Other gases

Indicator	Justification
H <sub>2</sub> S LEL O <sub>2</sub> CO Cyanide  Levels to be determined	<p><b>ONLY MONITORED IF CONSIDERED A RISK.</b></p> <p>Monitoring throughout the treatment operation by means of hand held gas monitors.</p> <p>The gas detector set to alarm at a level low enough to ensure the health and safety of people but high enough to prevent false alarms.</p> <p>In determining the required alarm levels for fixed gas detection systems, the following will be taken into account:</p> <ul style="list-style-type: none"> <li>any industry standards and recommendations;</li> <li>the lower explosion limit of the gas or vapour;</li> <li>the time required to respond to the alarm;</li> <li>the actions to be taken following the alarm;</li> <li>the toxicity of the gas or vapour.</li> </ul> <p>A suitable safety margin should also be incorporated to account for ventilation dead spots, where vapours could accumulate, and the variability of natural ventilation.</p>

Surface Water

Not applicable

Preferential Pathways

Indicator	Justification
Observation of drainage runs, other ducts, etc which lead to receptors	<p>Use of site plans and supervision of site investigations will minimise the risks associated with these.</p>







QCS014d – Environmental Monitoring – Dust (mg/kg).

Using dust monitor at monitoring location (average 2mins).

Trigger levels Total Mass > 0.025 mg/kg or background (whichever is greater)

Date	Dust particle size range (Avg)	Time	#1	#2	#3	#4	#5	Comments
	Total							
	PM10							
	Resp							
	Total							
	PM10							
	Resp							
	Total							
	PM10							
	Resp							
B'Ground	Total							
	PM10							
	Resp							
	PM2.5 / 1.0							
B'Ground	Total							
	PM10							
	Resp							
	PM2.5 / 1.0							

**Acceptance Procedure**

Historical site investigations carried out demonstrate that the nature of the contaminated soils on site is well understood.

If the material is found to be notably different to that anticipated, then the specific area will be QUARANTINED while further evaluation (including chemical analysis) is undertaken.

Should the QUARANTINED material be treatable; the QUARANTINE status will be removed and works continued.

Should the QUARANTINED material be untreatable; a review and new Remediation Strategy be formulated and agreed with the Regulators.

**Commission, Operating and Maintenance.**

All remedial work carried out by Envirotreast requires an internal Project Quality Plan to be completed. Compliance with this company procedure ensures all operations are carried out to the required standard in a safe and organised manner. The relevant check-sheets can be seen on the following pages.

The Project Quality Plan addresses all aspects of the site operations including:

- Protection of the Environment
- Maintenance of Plant & Equipment
- Site Health & Safety
- Site Security

In addition to the above we will also be adhered to:

- Risk Assessment
- Monitoring Plan
- Control of Noise

Due to the construction of the ECS, it is highly unlikely that this bund will be damaged. However, checks of the top and sides of the bund will be undertaken throughout the day. Particular care will be taken during deliveries of materials to ensure that the bund remains intact. It is also considered unlikely that spillages will occur.

Should it be considered possible that the bund has been damaged, it will be immediately replaced. If this occurs, a validation report will be forwarded to NRW.

There will also be a number of sumps located within the ECS, so as any spillages can be pumped out and reused.

At the conclusion of the project, all material within the bund will be assessed, clean base will be reused within the development, and unsuitable base will be disposed of at a licenced waste facility in accordance with its waste classification.

Typical - QCS006a – Weekly Record of General Inspection

Site:

Week beginning:

Items Inspected		M	T	W	T	F	S	S	Sign
1	Site Entrance								
2	Mobile treatment plant identification board								
3	Hazard Signs								
4	Access / Site Road								
5	Boundary Fence / Gate								
6	Plant & Equipment (including refuelling area)								
7	Engineered Containment System								
	Mixing Plant & Equipment								
	Chemical Storage Area								
8	Fires (Potential)								
9	Dust Control								
10	Noise Control								
11	Pest Control								
12	Odour / VOC Control								
13	Litter Control								
14	River quality / inspection								
15	Overall Site Health & Safety								
16	Quality Assurance								
17	Records								
18	Record Security								
19									
20									
	Initial by								

Inspection of plant and equipment will be carried out by the specialist contractor, prior to start-up each day. Inspection is primarily for possible leakages and / or any potential health hazards. If unsatisfactory, refer to comments sheet.

Satisfactory (√)      Unsatisfactory (X)

Typical - QCS007a - Equipment Maintenance Schedule and Procedure

The following maintenance schedule and procedure can be used for the following pieces of equipment for application of the Envirotreat process:

- Paddle Mixer Unit or Slurry mixing units
- Generator
- Water tanks and pipework
- Compressors
- Telehandler
- Pumps and associated Pipework
- 360° Excavator fitted with Specialist Buckets for mixing or bespoke mixing unit
- Extension arm

Plant & equipment will be inspected visually, on a daily and weekly basis. Inspection is primarily for leakages and/or any potential health hazards.

Inspection will be carried out by the operator.

Components checked (where applicable) will be labelled and described by the operator carrying out the visual checks.

Repairs and/or replacement parts including serial numbers (where applicable), will be recorded under the 'comments' section.

Test certificates and operator certificates for all personnel operating plant and equipment on site need to be in order prior to commencing the project. Only trained personnel will be allowed to operate plant & machinery.

Typical - QCS007b – Daily / Weekly Record of Plant Inspection

Site:

Week beginning:

Items Inspected		M	T	W	T	F	S	S	Sign	
1	Fuel Supply									
2	Oil / Water Level									
3	Pipe (Hydraulics) and hoses									
4	Quick hitch (where applicable)									
5	Emissions									
6	Warning lights / alarms									
7	Pump / Rubber Seals									
8	Tank integrity (bowser)									
9	Drip trays / bunds / spill kit									
10	Mud on Vehicles									
11	Noise level									
12	Vandalism / damage									
13	Tyres / tracks (where applicable)									
14	Mirrors (where applicable)									
15										
16										
	Initial by									

Satisfactory (√)

Unsatisfactory (X)

## Control of Noise

There are two main areas where noise has an impact and companies have a responsibility: environmental noise and occupational noise. Although the sources of these types of noise are likely to be the same from construction sites, the ways they are measured and their legal enforcement are different.

Environmental noise (or noise pollution) is any noise that affects the surrounding environment. According to the World Health Organisation, noise pollution is the second biggest cause of environmental health problems, which makes it clear why it is important to reduce and control it effectively. Environmental noise can also lead to poor health in people and reputational damage to your business, especially if nuisance noise complaints are raised with local authorities.

Occupational noise (or noise at work as it's often called) is the noise people experience while doing their everyday jobs. Naturally, building things or demolishing them is noisy work. According to the UK's Health & Safety Executive, construction is one of the highest-risk industries for noise. So, it's important to know what to look out for, how to measure noise and, most importantly, control it to reduce the risks to site workers.

Lower Action Values Daily or weekly exposure: LAeq 80dB(A) Peak sound pressure: LCPeak 135dB(C).

Upper Action Values Daily or weekly exposure: LAeq 85dB(A) Peak sound pressure: LCPeak 137dB(C)

Monitoring will be carried out and results interpreted by suitably experienced Envirotreast personnel using a handheld Class 2 sound meter

Records of results from all monitoring will be filed in the Project Quality Plan which will be on-site during hours of operation.

Noise during application of the technology / process may originate from groundwork vehicles, the batching plant and / or any vehicles delivering materials to the site.

Receptors at risk are site operatives and the local community.

Any noise generated from the plant and equipment operating on-site will be minimal. Additionally, the batching plant will be located as far as practically possible from the receptors and all equipment will be appropriately maintained. There will be a **negligible** impact on receptors from noise during delivery of materials to the site for the reasons stated below: -

The delivery process is not generally noisy and will only occur during sociable working hours.

The impact of construction site vehicles on the surrounding road network has been considered. On average, there will be a maximum of two deliveries per day.

Deliveries will only be permitted in designated access points for operational vehicles.

Noise levels emanating from the remediation operation will be monitored on a daily basis from the location highlighted on the Site Plan. The monitoring regime will consist of an audio assessment with particular attention paid to the trigger of noise rising significantly above the baseline levels i.e. road noise, noise from nearby factories/housing etc.

If the trigger level is surpassed, acoustic screens covering 2m high heras fencing will be located around the batching plant.

### **Control of Odours and VOCs**

Monitoring will be carried out and results interpreted by experienced Envirotreat personnel. Records of results from all monitoring will be filed in the Project Quality Plan which will be on-site during hours of operation.

Receptors at risk are site operatives and the local community.

To minimise the risk of these we propose utilising a suitable hand held gas monitor - for example – MiniRAE 2000, capable of monitoring isobutylene, n-hexane, m-xylene, benzene, styrene, toluene, vinyl chloride and generic VOC. The device has inbuilt alarm setting for exceedances of TWA and STEL.

Odour / VOC levels emanating from the remediation operation will be monitored on a daily basis and during treatment & excavation operations, from the locations highlighted on the Site Plan.

If the trigger level is surpassed, works will be stopped until corrective action is implemented.

### **Control of Dust**

To monitor dust a Microdust Pro - Real Time Dust Monitor or similar instrument is proposed.

Figure 10 - Site Location Showing Site Access, Location of Mobile Plant and Environmental Monitoring Locations.

