

Our Ref: MW/13203/ROA

Your Ref:

Contact: Michael Watkins

28 May 2026

MVR Solutions Limited

For the attention of Mr Jon Moore

Dear Jon,

REMEDIATION OPTIONS APPRAISAL (LCRM STAGE 2): LAND AT KELVEDON STREET, NEWPORT

MVR Solutions Limited (the client) is proposing the construction of a new residential development at land located on the corner of Kelvedon Street and Feering Street in Newport, NP19 0DT. The proposed development will consist of a three-storey apartment block containing 30 residential units and associated infrastructure including access road, car parking, SuDS, and shared soft landscaping.

Previous investigations and assessments have identified that remediation of contamination is required for the development.

Terra Firma (TFW Group Limited) were commissioned by the client to carry out a LCRM Stage 2 Options Appraisal.

The Remediation Options Appraisal is based on the findings of previous investigations and assessments. This report shall be read in conjunction with the following documents.

- TFW Group Ltd. December 2024 Geotechnical and Geoenvironmental Report: Proposed Residential Development, Land off Kelvedon Street, Newport. Reference 13203-GGR-01.
- TFW Group Ltd. May 2026 Tier 2 & Tier 3 Geoenvironmental and Geotechnical Report: Proposed Residential Development, Land off Kelvedon Street, Newport. Reference T2&T3GGR-181225-1320-03

The LCRM Options Appraisal Worksheet, which is appended to this letter concludes that the two methods of remediation are Containment – Cover System, and Containment – In Ground Barriers (Vapour Protection Systems).

We trust that the above is to your satisfaction, however, if you have any queries or require any further information, please do not hesitate to contact us.

Yours sincerely

for: Terra Firma



Michael Watkins

Enc.

Annex A - 13203 - LCRM Options Appraisal for Land off Kelvedon Street, Newport

Annex A

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As per Land Contamination Risk Management (LCRM) there are a number of stages to be undertaken. Stage 1 requires a risk assessment to be undertaken. Once an unacceptable risk has been identified progression is made to Stage 2 and an options appraisal is required. There are three steps to follow for this stage.

Step 1: Identify feasible remediation options.

For Step 1 the aim is to identify and produce a shortlist of feasible remediation options.

Site information needs to be up to date, objectives are set and plan for any regulatory controls that may be needed when remediation starts.

Step 2: Do a detailed evaluation of options.

In Step 2 the options are evaluated to determine which are the most suitable for dealing with each relevant contaminant linkage.

This is based on regulatory and stakeholder requirements, sustainability, cost, timescales, practicability, effectiveness, durability, environmental impact, track record, availability and health and safety requirements.

Step 3: Select the final remediation option.

In Step 3: The final remediation option or options are selected.

The chosen options are then taken forwards to Stage 3 of LCRM where the remediation strategy is developed.

If an option cannot be identified then a reassessment will be required.

Using this Worksheet

- Using the Stage 1 - Risk Assessment undertaken in the site investigation report identify which category of contaminants are present.
- Using the **Step 1 - Remediation Options** tab right click on the column heading (e.g. D, E, F etc) and select 'Hide'. This will remove any contaminant categories which are not applicable to the site.
- Identify which remediation options are available for the required media (e.g. soil, water or both).
- Using the **Step 2 - Options Appraisal** tab right click on the row heading (e.g. 4, 5, 6 etc) and select 'Hide' to remove any remediation options which are not available for the study site.
- Options may be quickly eliminated if they will not, meet legal or regulatory reasons, result in positive environmental outcomes, meet options appraisal objectives, be practical, durable and effective, meet costs and timescales or be sustainable. Justification should be provided.
- For any remaining options add a score of 0.1, 1 or 10 based on the criteria set out in the table at the bottom of the page.
- If an 'Availability' score of 10 is awarded it can be discounted from further consideration.
- Consideration is then given to the remedial option(s) with the lowest score(s).
- The chosen option is then transferred to **Step 3**.
- Using the **Step 3 - Final Selection** tab add the chosen remedial option(s) into the table heading.
- Provide site specific justification for the chosen remedial option.
- Consider if additional measures are required.
- Consider if multiple options compliment each other.
- If a suitable option cannot be determined further investigation works may be required.

Further information is available at:

LCRM Stage 2 Webpage

<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm/lcrm-stage-2-options-appraisal>

Defra Contaminated Land Remediation Report

www.claire.co.uk/component/phocadownload/category/5-external-documents?download=207:contaminated-land-remediation-report

Method	Remediation Options	Contaminant				
		Heavy Metals	PAH	Non-Halogenated Hydrocarbons	Haloenated Hydrocarbons	VOCs
Civil engineering	Containment - cover systems	S	S	S	S	S
Civil engineering	Containment - hydraulic barriers	W	W	W	W	W
Civil engineering	Containment - in ground barriers	S / W	S / W	S / W	S / W	S / W
Civil engineering	Excavation and disposal	S	S	S	S	S
Biological	Natural attenuation	W	W	W	W	W
Biological	Biopiles	X	S	S	X	S
Biological	Bioventing	X	S	S	S	S
Biological	Biosparging	X	S / W	S / W	S / W	S / W
Biological	Landfarming	X	S	S	X	S
Biological	Slurry phase biotreatment	X	S	S	S	S
Biological	Windrow turning	X	S	S	X	S
Chemical	Chemical oxidation	X	S / W	S / W	S / W	S / W
Chemical	Chemical dehalogenation	X	X	X	S	S
Chemical	Soil flushing	S	S	S	S	S
Chemical	Solvent extraction	X	S	S	S	S
Chemical	Surface amendments	S	X	X	X	X
Physical	Soil vapour extraction (SVE)	X	X	S	S	S
Physical	Dual phase SVE	X	X	S / W	S / W	S / W
Physical	Air sparging	X	X	W	W	W
Physical	Soil washing	S	S	S	S	X
Physical	Permeable reactive barriers	W	W	W	W	W
Stabilisation & Solidification	Vitrification	S	S	S	S	S
Stabilisation & Solidification	Hydraulic binders (e.g. cement)	S	S	S*	X	X
Thermal	Incineration	S	S	S	S	S
Thermal	Thermal desorption	S	S	S	S	S

Notes
S - Soils, made ground and sediments
W - Groundwater and surface water
X - Not Suitable
* - Pre-treatment may be necessary

Organic substances	Examples
VOCs	Benzene, ethylbenzene, toluene, xylene
Halogenated Hydrocarbons	Tetrachloroethene, trichloroethene
Non-halogenated Hydrocarbons	Oils, fuel, phenols
PAHs	Benzo(a)pyrene, indeno(1,2,3cd)pyrene
PCBs	209 congeners e.g. PCB 28, 52, 101
Dioxins & Furans	2,3,7,8 – tetrachlorodibenzo-p-dioxin
Pesticides & Herbicides	Dieldrin, hexachlorocyclohexane
Inorganic substances	Examples
Heavy Metals	Arsenic, cadmium, lead, copper, zinc
Non-Metals	Sulphate, sulphide, nitrate
Asbestos	Amosite, chrysolite, crocidolite
Cyanides	Free or combined
Explosives	Trimethylene, trinitromine, nitroglycerine

Compiled from the LCRM Remediation Options Appraisal Matrix

Remediation Options	Evaluation Criteria												
	Availability	Technical Requirements	Regulatory & Stakeholder Requirements	Cost	Timescales	Practicability	Effectiveness	Durability	Track Record	Environmental Impact	Sustainability	Health & Safety Requirements	Final Score
Containment - cover systems	0.1	0.1	0.1	1	0.1	0.1	1	1	0.1	1	1	0.1	5.7
Containment - in ground barriers	0.1	0.1	0.1	1	0.1	0.1	1	1	0.1	1	1	0.1	5.7
Excavation and disposal	0.1	0.1	0.1	10	1	10	0.1	0.1	0.1	10	10	1	42.6

Evaluation Criteria	Score	Evaluation Criteria	Score
Availability		Effectiveness	
Systems are readily available and equipment and material can be obtained locally from a typical builders merchants.	0.1	The contamination is removed and risk to the receptor is now negligible.	0.1
Systems are some what available and equipment and materials can be obtained within the UK but are more specialist.	1	The contamination remains but the risk to the receptor is now sufficiently managed.	1
Systems are unlikely to be available nationally and equipment and materials may need to be imported.	10	The contamination remains and additional procedures are required to protect the receptor.	10
Technical Requirements		Durability	
Can be undertaken by anybody after basic instruction.	0.1	The system is highly durable and low maintenance.	0.1
Can be undertaken by most after training and is likely to require the involvement from a geoenvironmental specialist.	1	The system is somewhat durable and/or will require maintenance if possible.	1
Requires a high degree of training and knowledge and will need a geoenvironmental specialist.	10	The system is not very durable in the required setting and will require regular monitoring or maintenance.	10
Regulatory and Stakeholder Requirements		Track Record	
Requirements are minimal with little regulatory involvement.	0.1	The system is widely used, has a good track record and could be considered an industry standard.	0.1
Requirements are moderate with regulatory and stakeholder involvement required.	1	The system is not widely used but has been proved effective when used.	1
Requirements are high with significant regulatory and stakeholder involvement required.	10	The system has a poor track record or is a new method that will require on site pilot testing.	10
Cost		Environmental Impact	
Low cost.	0.1	The environmental impact is low.	0.1
Moderate cost.	1	The environmental impact is moderate.	1
High and ongoing cost.	10	The environmental impact is high.	10
Timeframe		Sustainability	
Completed in days or weeks.	0.1	The chosen method is sustainable.	0.1
Will require months to complete.	1	The chosen method is somewhat sustainable.	1
Will require years or even decades to complete.	10	The chosen method is not sustainable.	10
Practicability		Health and Safety Requirements	
The system fits the site well and will not cause conflicts with any on going operations.	0.1	The health and safety requirements are low.	0.1
The system fits the site but will require a change to usual operations or is somewhat practical for the site.	1	The health and safety requirements are moderate.	1
The system will require a significant change in usual operations or is not practical for the site.	10	The health and safety requirement are high.	10

	Justification for Option 1	Justification for Option 2
Evaluation Criteria	Containment - cover systems	Containment - in ground barriers (Vapour Protection System)
Availability	Suitable soil can be obtained relatively easily and at reasonable cost. Recycled soils can be obtained to make the importing of soil more sustainable. Soils need to be brought onto site to achieve landscaping requirements.	A vapour protection system can be designed by a suitably qualified person and installed and verified as part of the construction without causing significant difficulty or changes to the initial structural design
Technical Requirements	Easily carried out by groundworkers, and verified by engineering geologist/geoenvironmental engineer.	Must be designed and verified by suitably qualified professionals.
Regulatory & Stakeholder Requirements	The importing of soil to cap the contaminated area of the site is acceptable to the client. From experience, the contaminated land officer is amenable to the use of cover systems.	Considered a suitable method of remediation by regulators following a fully justified and robust assessment
Cost	Soils need to be brought onto site to achieve landscaping requirements. Topsoil will come at a higher price than recycled aggregate, etc, however the costs are reasonable.	The cost to the build is increased but is reasonable compared to other options such as source removal or remediation of the groundwater.
Timescales	Time taken to import soil, lay and verify are short and acceptable to the client.	The design and installation can be carried out at reasonable timescales and are quicker than most if not all other options
Practicability	The use of a soil capping layer with no-dig barrier and capillary break is considered to be the most practical method of remediation.	Vapour protection systems are considered the most practical solution
Effectiveness	Using a capping system to significantly reduce the pathway between contaminants and the receptor is an effective solution.	Vapour protection systems are considered an effective solution as long as designed, installed, and verified properly.
Durability	Durable capping systems can be designed and implemented effectively.	Vapour protection systems are considered a durable solution
Track Record	Capping systems are a tried and tested solution over many decades.	Vapour protection systems are a tried and tested solution over many decades.
Environmental Impact	Whilst the transport of soils is not that environmentally friendly due to the carbon footprint of the vehicles, as soil is required to provide the landscaping, the use of a capping system does not add significantly to this. Also, if recycled soils can be used, this will go some way towards reducing the environmental impact.	Vapour protection systems have a relatively minor environmental impact as limited additional materials are required. Compared to most if not all other solutions, it poses by far the lowest environmental impact
Sustainability	The amount of soil to be brought onto site for the purpose of capping the site is relatively small. All attempts should be made to source the capping soils as locally as possible to reduce the amount of transport required for the soil delivery. This will also lead to reduced delivery costs. Attempts should also be made to obtain the soil from as sustainable a source as possible such as recycled soils. It should also be noted that even if the soils on site were suitable to left in-situ from a human health perspective, soil would need to be imported for landscaping purposes.	Vapour protection systems are a sustainable method of allowing construction on VOC-impacted brownfield sites
Health & Safety Requirements	The health & safety requirements for the use of a cover system is relatively low.	Vapour protection systems is very low.
Are there any other considerations that need to be made to protect receptors?	Due to the high concentrations of contamination it is considered that the introduction of an engineered barrier and a capillary break is required to provide a more robust cover system.	The vapour protection system must be designed, installed and verified by suitably qualified professionals