

Technical Note



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Date: 23-11-18

To: EA

Subject: 35 Peterborough Road, Crowland - Revision of DQRA targets

Following review of the Remediation Strategy (Ref: CRO-HYD-XX-RS-RP-GE-0001), the Environment Agency requested additional Detailed Quantitative Risk Assessment (DQRA) to model the fate and transport of Volatile Organic Compounds (VOCs) within the soils underlying the Peterborough Road site. Additional assessment was undertaken using Drinking Water Standards (DWS) as a reference concentration for the VOCs in Table 1.

In line with GP3 guidance, a compliance point of 50m was used for hazardous substances and 250 m for non-hazardous substances. There are no abstraction points within 250 m.

Half lives for vinyl chloride were derived from EA2002 R&D Technical Report P2-228/TR and an anaerobic rate of 100 days was determined. This was based on the remediation design which includes the implementation of an anaerobic bioremediation substrate to maintain reducing conditions over the following 2-5 years.

Additional targets were calculated using the Remedial Targets Methodology (RTM) for Tier 3 soil concentrations.

Table 1: Additional compounds assessed

Determinand	EQS (µg/l)	DWS (µg/l)	Notes	RTM target (mg/kg)
vinyl chloride	None	0.5	Source: UK DWS. Note – hazardous substance.	3.580
<i>trans</i> -1,2-dichloroethene*	None	50	Source: WHO (2018) Note – non-hazardous substance.	28,203
<i>cis</i> -1,2-dichloroethene*	None	50	Source: WHO (2018) Note – non-hazardous substance.	27,355
* using non specific half-life of 750 days for total chlorinated solvents, as reported in Hydrock report CRO-HYD-XX-RS-RP-GE-0001				

Vinyl chloride was identified as a potential risk with reductions required from current site maximum of 7.6 mg/kg to a target of 3.5 mg/kg. Dichloroethene was found to not present a risk at current concentrations.

On the basis of the additional assessment the remediation criteria for re-use of soils below cover (Table 7.1 of Remediation Strategy) will be re-issued to include the above. The complete criteria are as shown in Table 2.

Table 2: Revised Re-use Criteria Below Cover System, Hardstanding or Built Environment

Chemical of Concern	Controlled Waters RTV (mg/kg)	Human Health RTV (Outdoor air vapour pathway) (mg/kg)	Proposed RTV mg/kg	Notes
Toluene	-	1,920	1,920	Solubility Limit
Ethylbenzene	-	1,220	1,220	Solubility Limit
m,p-xylene	-	1,350	1,350	Solubility Limit
o-xylene	-	1,120	1,120	Solubility Limit
1,2-DCA	0.201	4,290	0.201	
Vinyl Chloride	3.58	112	3.58	
TCE	136	3,220	136	
1,1,1-TCA	974	2,920	974	
PCE	8,300	951	951	
Benzene	21.2	2,260	21.2	
1,1,2-trichloroethane	1,340	8,210	1,340	
Dichloromethane	0.173	9,860	0.173	
Cis 1,2 DCE	22,203	-	22,203	
Trans 1,2 DCE	27,355	-	27,355	

Enclosed

3 x RTM Model Sheets