

Technical Note

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cc	
Prepared by	Del Harrison
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Subject	Addendum to Remediation Implementation Plan (RIP): Phase 1 re-use criteria

6th Floor 3 Piccadilly Place Manchester M1 3BN United Kingdom

t +44 161 228 2331 d +44 114 283 3632

[arup.com](https://www.arup.com)

1. Background

Arup prepared a Detailed Quantitative Risk Assessment (DQRA) report¹ for the Application 2 area of Victoria North in Manchester. The DQRA considered the risks posed by known areas of contamination and the re-use of materials close to the River Irk.

The remedial targets developed in the DQRA were transferred into the Remediation Strategy² and Remediation Implementation Plan (RIP)³ for Phase 1 of the works. The Phase 1 site boundary is shown in **Figure 1** below and comprises the areas of Victoria North known as Red Bank Plateau and Red Bank Terrace.

The main objective of the remediation strategy for Phase 1 is to remove known areas of contamination that were identified through ground investigation. A discovery strategy will also be in place throughout the works to ensure any previously unidentified areas of contamination are dealt with appropriately.

The entire Phase 1 area comprises several metres of made ground, which was placed in the 19th and 20th centuries to create a raised platform for railway infrastructure. Where no specific remediation is required, the existing made ground will be locally redistributed to create a landform for future development. This local redistribution of materials was described in the DQRA as materials which are excavated and re-used within the same site area, for example: materials which are excavated within Red Bank Plateau and re-used within Red Bank Plateau. This activity was not considered to introduce new contaminant linkages, or increase the risks to controlled waters. The DQRA concluded that locally redistributed made ground was not required to meet specific chemical re-use

¹ Arup (2023) Controlled Waters Detailed Quantitative Risk Assessment for Victoria North HIF Infrastructure Works. VNIF-ARP-ZZ-YYY-RP-CG-1000 P01 21st August 2023

² LK Group (2023) Victoria North Infrastructure Work Phase 1 Delivery (Pre-Development) Remediation Strategy. LKC 22 1587 October 2023

³ Arup (2023) Victoria North HIF Infrastructure Works – Phase 1. Remediation Implementation and Verification Plan. VNIF-ARP-ZZ-YYY-RP-CG-0017 P01, 27th October 2023

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criteria, provided that it does not show signs of contamination. This conclusion was transferred into Section 2.4 of the Remediation Strategy.

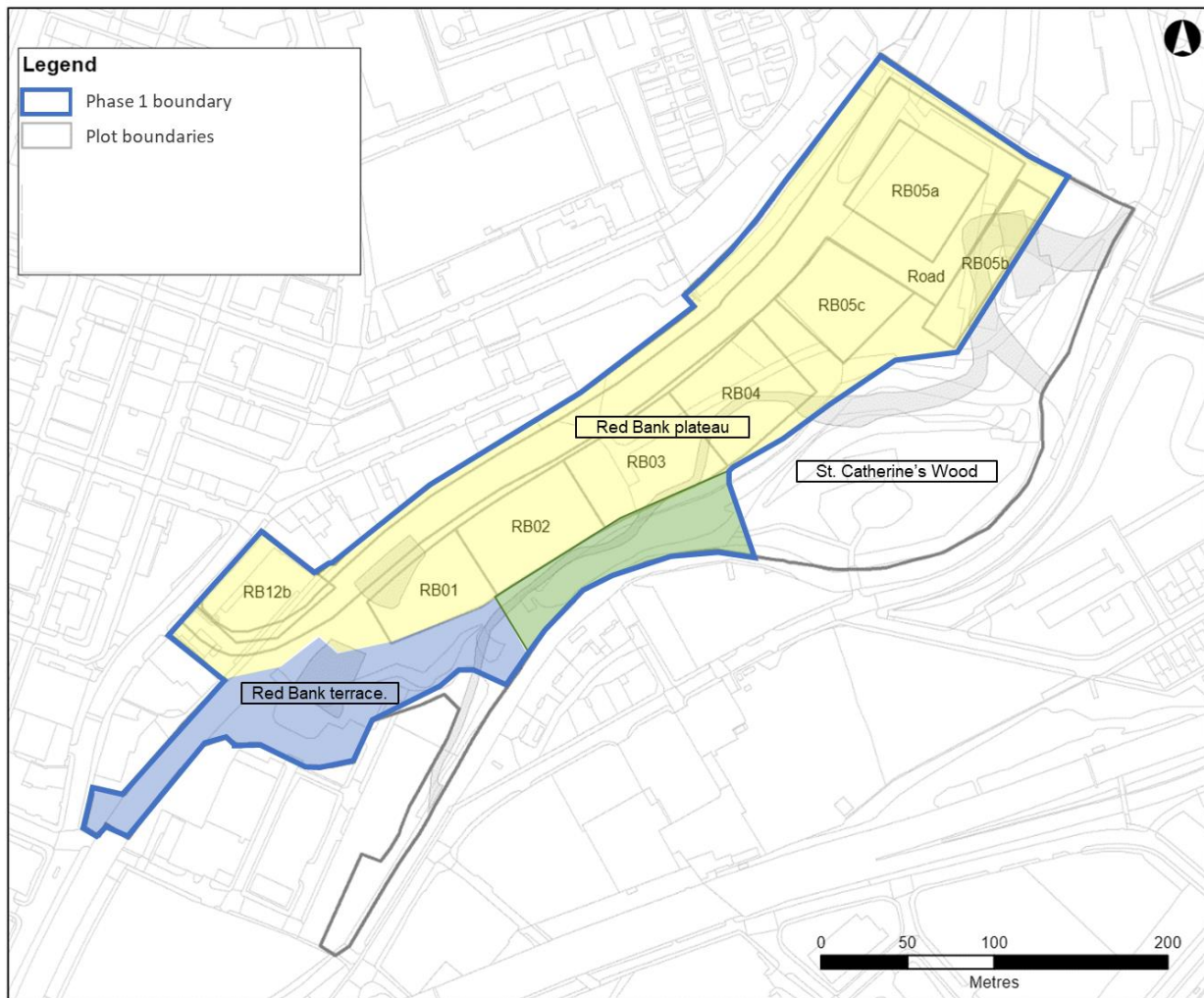


Figure 1 Victoria North Phase 1 boundary

The DQRA acknowledged that, if made ground was to be taken from one area of the site (e.g. Red Bank Plateau), and placed as fill in a different area (e.g. St. Catherine's Wood), that this would not be 'local redistribution' and could potentially introduce new or different contaminant linkages. Therefore, re-use criteria were generated in the DQRA to ensure that the River Irk would be protected if made ground was to be re-used in a different area to where it originated.

For the purposes of risk assessment and the protection of the River Irk, the terms 'Zone 1' and 'Zone 2' were introduced in the DQRA. The zones were defined as follows:

- Zone 1 was the area of land between the River Irk and 50m from the riverbank
- Zone 2 was the area of land between 50m and 130m from the River Irk.

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Re-use criteria were derived for Zone 1 and Zone 2 in the DQRA. The Environment Agency (EA) provided formal comments on the DQRA in October 2023⁴, which stated that:

“For non-PFAS contaminants, we welcome the use of the RTM P20 derived values as set out in Table 34 [of the DQRA] for ‘Zone 1’ as identified in Drawing 14 [of the DQRA]. As Table 34 presents the more conservative values (between Table 34 and 35) we advise these are used for the Phase 1 area to provide the best assurance that the protection of ‘controlled’ waters is achieved”.

It appears that the term ‘Phase 1’ may have been used in the text above rather than ‘Zone 1’ and has resulted in unintended, overly conservative, consequences. In the Remediation Implementation Plan the significantly more conservative re-use criteria derived for the sensitive **Zone 1** adjacent to the river are applied to the less sensitive **Phase 1** planning area on Red Bank Plateau. As the RIP has been presented, the values in Table 4 of the RIP apply to the re-use of all material within Phase 1, including locally redistributed material.

As was illustrated in Table 34 of the DQRA (reproduced as **Figure 2** below), comparison of the 95th percentile concentrations of several of the contaminants in made ground with the Zone 1 re-use criteria for the area adjacent to the river, showed that soil from Red Bank Plateau is unlikely to be suitable for re-use outside of Phase 1, because of the potential risks to the River Irk. For this reason, Section 7.7.2 of the RIP stated that “There will be no transfer of site-won fill from the Phase 1 area to any other areas of the [Victoria North] site”.

Application of the Zone 1 criteria also to the Phase 1 planning area would likely to mean that no made ground could be re-used, as the majority of made ground on Red Bank Plateau exceeds the Zone 1 criteria. This was not the intended outcome and is not consistent with the desired sustainable approach to the proposed earthworks, which is to retain as much suitable material on site as possible. The way forward to rectify this is presented below.

⁴ Environment Agency (2023) FT-SEP-23-4 – Technical Review: Controlled Waters Detailed Quantitative Risk Assessment and FT-SEP-23-5 – Technical Review: Phase 1 Delivery (Pre-Development) Remediation Strategy Associated with Planning Permission 137079/JO/2023, 3rd October 2023

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Contaminant	RTM-calculated soil remediation target (mg/kg)	95 th %ile of soil concentration within Red Bank Plateau(mg/kg)
Nickel	26.5	50
Zinc	191	500
Benzo(a)Pyrene	0.4	2.5
Fluoranthene	0.04	7
Anthracene	0.15	1.8
TPH – Aliphatic C8-C10	1910	9.9
TPH – Aliphatic C10-C12	14900	9.9
TPH – Aliphatic C12-C16	297000	17.9
TPH – Aromatic C8-C10	153	7.9
TPH – Aromatic C10-C12	76	31.2
TPH – Aromatic C12-C16	208	60.4
TPH – Aromatic C16-C21	323	85
TPH – Aromatic C21-C35	2453	200
TPH C8-C35	2500*#	
PFOS	8.17E-05	<0.002
PFOA	1.24E-05	<0.001
* RTM-calculated remediation criteria for several of the TPH fractions are far in exceedance of any soil concentrations. Any soils exceeding these criteria would be visibly grossly contaminated. Therefore, it was considered appropriate to set a soil remediation target for TPH C8-C35. # If exceedances of these values are noted, the risk-derived criteria for individual carbon bands detailed in this table shall be applied.		

Table 34: Calculated re-use criteria for site-won soils placed within Zone 1

Figure 2 Table 34 from the DQRA Report

2. Proposed document amendments

No amendment is proposed to the Remediation Strategy, as this document already reflects the recommendations of the DQRA.

We propose to redact Table 4 of the RIP, as it was not the intention of the modelling presented in the DQRA for Zone 1 re-use criteria to be applied to all re-used materials, regardless of where they are placed.

The Remediation Strategy states that all re-used materials within Phase 1 will be chemically tested, in order to provide information on the ground conditions remaining after remediation.

It is proposed that the RIP is amended to state that re-used materials will be tested at a frequency of 1 per 500m³ for the contaminants of concern (**Table 1** below). The data obtained through the testing of site-won materials will be collated for presentation within the final verification report for Phase 1.

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Contaminant	Reference value (mg/kg)
Nickel	56
Zinc	2690
TPH C8-C35	1000
Fluoranthene	120
Anthracene	31
Benzo(a)pyrene	26
PFOS	<0.002
PFOA	<0.001

Table 1 Reference values for re-used made ground within Phase 1

The reference values listed in **Table 1** above will replace the values that are currently in Table 4 of the RIP. The reference values represent typical made ground, excluding outliers. They are the maximum concentrations measured in the made ground within the Phase 1 area of Red Bank Plateau, excluding data from areas which are to be remediated, as the soil in these areas was not typical of the made ground within Red Bank Plateau. If the test results for any site-won materials lie outside the envelope on which the contamination risk assessment was based (i.e. the reference values in **Table 1**), then the results will be reviewed to ensure that the risk assessment is still valid.

The re-use of materials will also be subject to the continued application of the discovery strategy set out in Section 4.13 of the RIP, to ensure that all site-won materials are inspected for signs of contamination, and are only re-used if they do not display any visual or olfactory evidence of contamination. The application of the reference values will also provide a mechanism to identify contaminants that do not present visual or olfactory evidence.

This approach does not weaken the protection to the River Irk, as there are no proposals to re-use made ground outside of Phase 1 in more sensitive locations and the assumptions of the DQRA are still valid. It also does not weaken the protection to human health, as the Remediation Strategy still requires developers to break the pathway between the made ground and future site users.

Separate proposals will be put forward for materials re-use within St. Catherine's Wood, which is to be redeveloped as planning Phase 2.

3. Next steps

The existing Remediation Strategy and RIP have been accepted by the Environment Agency as evidence supporting the discharge of Condition 7a of 137079/JO/2029 for Phase 1. If the proposals in this note are acceptable to the Environment Agency, this note will form an addendum to the RIP.

Given that earthworks have commenced on site, we would appreciate confirmation in writing at the earliest possible opportunity, that the proposed amendments in this note are acceptable to the Environment Agency.

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DOCUMENT CHECKING

	Prepared by	Checked by	Approved by
Name	Del Harrison	Colin Reader	Jenny Lightfoot
Signature			