

- The length of time for which monitoring is expected to continue;
 - Contingency plan in the event that groundwater monitoring over time does not demonstrate that MNA is occurring; and
 - Reporting requirements for the MNA program.
- Health and safety requirements for particular activities;
 - Detail on the parties responsible for the implementation of the long-term EMP;
 - Detail on the regulatory authorities involved and the management inputs required from each for the integration of environmental management and monitoring measures for soil and groundwater; and
 - A detailed program of review and audits.

The Auditor requires that it be demonstrated that the provisions in the long-term EMP are feasible, able to be implemented and able to be legally enforceable (i.e. a mechanism exists, such as development consent conditions, to give the plan a basis in law). Prior to endorsement of the long-term EMP the Auditor requires that the relevant consent authority is satisfied that the inclusion of a development consent condition relating to the implementation of the EMP is acceptable.

If contaminated groundwater remains on the Site that is considered by the consultant and/or the Auditor to present an unacceptable risk to users of the Site or to the environment, then further action would be required to be implemented, prior to the development of the GMP. Any action to be undertaken that has not been previously detailed in the RAP is required to be provided to the Auditor for endorsement prior to implementation on the Site.

Further to the information provided in the RAP, the Auditor requires that for the additional monitoring wells to be installed as part of the GMP, the locations and specifications for construction of the wells and the analytes and physico-chemical parameters to be monitored should be developed by an experienced hydrogeologist. The Auditor requires that monitoring wells be located so that they are able to be maintained during and after development of the Site. Well construction and monitoring details are required to be described in a report that is to be reviewed by the Auditor prior to their installation. It is the Auditor's opinion that the wells should be installed and monitoring commenced at the earliest opportunity to allow trends in groundwater conditions to be documented. It is the Auditor's opinion that the results of any monitoring conducted on the Site either during or post-remediation should be reported and reviewed by the Auditor.

Any change to the long-term EMP in the future is required to be endorsed by the Auditor and by NSW DECC. The long-term EMP is required to be finalised to the satisfaction of the Auditor prior to issue of a Site Audit Statement that addresses the suitability of the Site for the proposed use.

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8.0 Audit Conclusions

It is the Auditors opinion that the RAP was presented in substantial accordance with the relevant guidelines endorsed by NSW DECC.

The Auditor notes that the remediation strategy and approach presented in the RAP has been required to be developed to meet RailCorp's long-term objectives for the Site and has been developed with regard to allowing retention of heritage structures at the Site.

The Auditor endorses the overall remedial strategy presented in the RAP. It is the Auditor's opinion that the remedial strategy is capable of being implemented, is technically feasible and is environmentally justified.

However, the Auditor requires that a number of measures be implemented at various stages prior to, during and after the remediation works. These requirements are addressed in detail within the previous sections of the SAR and are summarised below.

8.1 Pre-Remediation Works

8.1.1 Requirements for Sampling Plans

The Auditor requires that prior to commencement of the remediation works, Sampling Plans, preferably in the form of Validation SAQPs, are prepared in accordance with the guidelines endorsed by NSW DECC and are issued to the Auditor for endorsement. The Auditor notes that some detail on validation procedures were provided in the RAP, however, the Sampling Plans must document the DQOs, DQIs, sampling program, sampling methods, analytical program and other field procedures in accordance with the requirements of NSW DEC (2006).

The Auditor considers that the proposed soil validation criteria are generally appropriate for the validation works to be undertaken at the Site. However, the Auditor requires that clarification of the application of risk-based criteria be provided in the Sampling Plans. As discussed in Section 6.1.1 of this SAR, the Auditor notes that the risk-based criteria generated from modelling at particular depths, as presented in the RAP, was incorrect and requires amendment to reflect the results of the modelling as presented in Appendix B of the RAP (Attachment 3). The Auditor also considers that the risk-based criteria should be applied only to the depths inputted into the model and that further clarification is required prior to the application of these criteria at the Site. The Auditor also requires that this clarification and correct validation criteria is presented in the Sampling Plans to be developed for the validation works.

The Auditor notes that soil validation criteria were provided only for soil to depths of 8 m bgs. However, as discussed in Section 6.2.1 of this SAR, the RAP indicated that validation samples would be collected from excavation walls "every 2m below 8 m bgs". The Auditor requires that clarification of the proposed depth of excavations and sampling strategies be provided in the Sampling Plans for the validation works. If excavations are to be extended to below 8 m bgs, the Auditor requires that clarification is provided on validation criteria to be adopted for soils below 8 m bgs. In the event that contamination removal is limited due to practicalities and site constraints (i.e. contamination is removed to the extent practicable), this should be clearly stated in the Sampling Plans and the potential for contamination to remain on-site and any associated risks to the health of occupiers of the Site and to the environment be discussed in the Sampling Plans.

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8.2 During Remediation Works

8.2.1 Stabilisation and/or Treatment Works

The Auditor requires that the stabilisation and/or treatment works conducted either on the Site or on the proposed alternative treatment site are appropriately documented prior to the commencement of the works and are reported at appropriate milestones during the works.

The Auditor requires that this documentation includes at a minimum, the location/s of the works, consent from the relevant regulatory authorities, materials tracking information, the origin of the materials on the Site, description of the materials to be stabilised and/or treated, the stabilisation and/or treatment methodologies, volumes of material stabilised and/or treated, sampling and analytical program, analytical results for materials both pre and post stabilisation and/or treatment, results of the monitoring and maintenance of treatment facilities, demonstration that the treatment facilities are operating in accordance with licences issued by NSW EPA and ultimate waste classifications.

The Auditor requires that this information is provided to the Auditor for review periodically or at milestones, during the remediation works and that it be included in interim validation reports as stages of the remediation works are completed or in full in the final validation report.

8.2.2 In-situ Treatment

Prior to conducting any in-situ treatment on the Site, the Auditor requires that a plan detailing the treatment process including the proposed type and volume of chemicals to be used, supporting evidence demonstrating the appropriateness of the chemical to be applied at the Site and application methodology be developed which will require endorsement by the Auditor prior to implementation of the treatment works on the Site.

8.2.3 Suitability of Materials for Reinstatement

The Auditor requires that information, including the source of material and analytical results, demonstrating the suitability of the material to be used for the reinstatement works be provided to the Auditor for review, prior to the commencement of the reinstatement of the Site.

8.2.4 Material Tracking

Given the various methods in which excavated materials will be handled during the remediation works at the Site, the Auditor concurs with the need for a detailed tracking system for materials excavated from the Site as described in the RAP. The Auditor requires that the tracking information including material tracking forms, truck dockets, volumes of materials treated and other associated information is provided to the Auditor for review periodically throughout the remediation works. This information is required to be included in interim validation reports as stages of the remediation works are completed or in full in the final validation report.

8.2.5 Waste Classification

The Auditor requires that details of the waste classifications for materials at the Site be provided to the Auditor for review periodically throughout the remediation works or at stages in the remediation works where new waste classifications are conducted.

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While the Auditor considers that the immobilisation approvals proposed to be used on the Site appear to be appropriate for application to materials to be excavated from the Site, the Auditor requires that this is demonstrated, prior to the use of any immobilisation approvals in the classification of excavated materials for off-site disposal.

The Auditor requires that the waste classification information, material tracking forms, truck dockets, survey information/plans and other associated information for all materials excavated from the Site be provided to the Auditor for review periodically during the remediation works or at stages in the remediation works where new waste classifications are conducted. This information is required to be included in interim validation reports as stages of the remediation works are completed or in full in the final validation report.

8.3 Validation Works

8.3.1 Validation Report

The Auditor requires that the validation report prepared for the Site be completed in accordance with the relevant guidelines endorsed by NSW DECC.

The Auditor also requires that the validation report includes the characterisation of the materials retained beneath or surrounding the heritage structures on the Site and/or in areas of the Site at which validation criteria were not met and contaminated materials remained insitu, including the analytical results, physical description and their potential to leach or volatilise. Detail must also be included relating to the type of physical barrier and marking layers that will contain the contaminated materials including its integrity and long-term stability.

The Auditor also requires that the validation report include detail on material tracking including waste classification and stabilisation and/or treatment activities undertaken during the remediation works.

The Auditor also requires that the results of the pre-remediation and post-remediation groundwater monitoring be provided either within the validation report or within a separate report at the time of completion of validation report.

8.3.2 Long-term EMP

The Auditor requires that the long-term EMP for the Site is developed in accordance with the requirements of NSW DEC (2006) and includes the following:

- Objectives;
- Detailed description of the residual contamination present on the Site post-remediation, including the type of contamination, analytical results and location on the Site (including a plan prepared by a registered surveyor);
- Detailed description of the environmental controls that will be used to manage the residual contamination;
- Detailed description of responsibilities for implementing various elements of the provisions contained in the EMP;
- Timeframes for implementing various elements of the provisions of the long-term EMP;
- GMP is required to include detail on the following:

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- Justification of the management goals developed for groundwater at the Site;
 - A sampling, quality and analytical plan for required monitoring;
 - Appropriate monitoring locations and depth within and down-gradient of any residual contamination;
 - Relevant assessment criteria to be used in evaluating monitoring results;
 - Frequency of monitoring and reporting;
 - Methodology on how the results of the monitoring will be evaluated over time and how decisions will be made regarding the ongoing management strategy and how it will be demonstrated that groundwater monitoring and/or management under the GMP be ceased;
 - The length of time for which monitoring is expected to continue;
 - Contingency plan in the event that groundwater monitoring over time does not demonstrate that MNA is occurring; and
 - Reporting requirements for the MNA program.
- Health and safety requirements for particular activities;
 - Detail on the parties responsible for the implementation of the long-term EMP;
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Any change to the long-term EMP in the future is required to be endorsed by the Auditor and by NSW DECC. The long-term EMP is required to be finalised to the satisfaction of the Auditor prior to issue of a SAS that addresses the suitability of the Site for the proposed use.

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8.3.3 Requirements for Sign-off on Validation Works

Given the nature and extent of the remediation works, the Auditor notes that the scope of works outlined in the RAP would not necessarily be undertaken across the whole of the Site at the same time. The Auditor has concern that the staging of the remediation works may impact the validation works of parts of the Site that have been remediated. The Auditor notes that a SAS certifying the suitability of the Site for the proposed use will not be able to be issued for the Site until the long-term EMP has been developed and agreed to by the relevant regulatory authorities, RailCorp and the Auditor.

8.4 Audit Summary

It is the Auditor's opinion that the RAP has been developed with appropriate regard to requirements of guidelines endorsed by the NSW DECC, to the requirements of the previous SAR, to RailCorp's long term objectives for the Site, to the source and nature and extent of the soil and groundwater contamination that has been identified on the Site and to the physical constraints of the Site. It is the Auditor's opinion that the remediation approach presented in the RAP could be implemented, subject to the requirements of this SAR, in order for the Site to be made suitable for the proposed future use for rail-related activities.

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