

1.0 Introduction

1.1 Background

This Site Audit Report relates to the remediation works proposed to be conducted at the former manufactured gas plant, known as the Macdonaldtown Gasworks, located at Burren Street, Erskineville, NSW (the Site). The Site is currently owned by Rail Corporation NSW (RailCorp) and is one of a number of properties which are referred to as being part of the "Macdonaldtown Triangle".

The Site operated as a manufactured gas plant from 1892 until the 1950s when the gasworks ceased operation and the majority of above ground structures at the Site were demolished and removed from the Site. A remaining gasholder structure was subsequently used to store gas manufactured at other plants until the 1970s, when the Site was closed. The Site has not been utilised since the 1970s and it is understood that RailCorp propose to use the Site for rail-related (industrial) activities.

Previous environmental assessments undertaken at the Site identified the presence of significant soil and groundwater contamination and in August 2000 the Site was declared by the NSW Environmental Protection Authority (NSW EPA) to pose a Significant Risk of Harm (SRoH) to human health and the environment. Subsequent to the declaration, a number of additional environmental assessments were completed between 2001 and 2007 to delineate the nature and extent of the soil and groundwater contamination and to determine remedial options for the Site.

RailCorp engaged CH2MHILL Australia Pty Ltd (CH2MHILL) to prepare a Remedial Action Plan (RAP) for the Site to enable RailCorp to enter into a Voluntary Remediation Agreement (VRA) with NSW EPA. This Site Audit Report (SAR) reviews the RAP prepared for the Site by CH2MHILL.

This SAR is the latest in a series of SARs completed on the stages of assessment, remedial planning, remediation and management of the identified soil and groundwater contamination present on the Site. A list of the SARs completed to date and a brief summary of the requirements of these Audits as they relate to this Audit are provided below.

Within this SAR, where a matter has been reviewed that has significant impact to the proposed remediation of the Site, it has been addressed in the body of the review as an "Auditor's opinion". The overall conclusions of the Audit are presented in the "Audit Summary" at the end of the SAR.

Given the complexities in the remediation strategy presented in the RAP, various components from the RAP, including figures, analytical results summary tables and risk modelling for the Site were required to be included as attachments to this SAR. Lists of references, source publications, abbreviations and acronyms are contained at the end of this SAR.

1.2 Report Reviewed

In preparing this SAR the Auditor has reviewed the following report:

- "Remedial Action Plan, Former Macdonaldtown Gasworks – Burren Street, Erskineville, NSW" by CH2MHILL Australia Pty Ltd, December 2007, Final Report; hereafter referred to as 'the RAP'.

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1.3 Purpose of the Audit

The purpose of this SAR was to review the RAP to determine whether it substantially met the requirements of relevant guidelines endorsed by NSW Department of Environment and Climate Change (NSW DECC) and to determine whether the Site can be made suitable for the proposed use if the Site is remediated in accordance with the RAP.

The Audit is a Statutory Audit under the Contaminated Land Management (CLM) Act (1997) and this SAR has been completed as part of the ongoing Audit of the Site.

It is proposed to provide SARs when reports of achievement of significant milestones are reviewed during the course of the proposed remedial works. At the completion of the remedial works and following review of satisfactory Validation Reports and Environmental Management Plans, the Auditor will then provide a SAR and a Site Audit Statement (SAS) certifying the suitability of the Site for the proposed use.

1.4 Previous Site Audit Report

The SAR relating to the Site prepared to date is as follows:

- "Site Audit Report – Delineation and Characterisation Sampling and Review of Remedial Options – Former Gasworks Site Burren Street, Erskineville NSW" by HLA-Envirosciences Pty Limited, 14 September 2007.

The purpose of the previous SAR was to review CH2MHILL's report "Delineation and Characterisation Sampling and Review of Remedial Options" dated March 2007, to determine whether it substantially met the requirements of relevant guidelines endorsed by NSW DECC and to determine whether the investigations completed were sufficient to allow the development of an appropriate RAP for the Site.

The previous SAR concluded the following:

- The subsurface investigations conducted by CH2MHILL were appropriate given the identified in previous reports;
- In some locations, particularly in the vicinity of the former gasworks structures where items of historical significance were uncovered during the investigation or items already heritage listed, the extent of the investigations were limited. Similarly, the extent of some sub-surface structures such as the pipework, which was stated to be likely to be extensive, was not able to be determined;
- Despite the limitations to the sub-surface investigations, it was considered, in general, that the discussion of the results of the previous investigations, the results of the subsurface investigation and the delineation of the contamination for each sub-area on the Site were appropriate for the purposes of estimating the extent of remediation required and to present potential remedial options for the Site.
- In consideration of the results and remedial options it was agreed that to meet RailCorp's long-term objectives for the Site, the remediation strategy needed to be directed at removing or reducing, to the extent practicable, the contamination source areas identified on the Site. It was stated that this approach would likely result in a reduction of the exposure pathways to site users and to environmental receptors;
- Given the nature and extent of the contamination and the heritage and physical constraints on the Site, it was considered that complete removal of source material on the Site was unlikely to be able to be achieved and that management strategies,

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including development of a long-term environmental management plan including groundwater monitoring, would form a significant component of the remedial strategy for the Site.

The previous SAR required that the RAP be developed to include detail on the following:

- Remedial objectives;
- Remedial options and strategy for the Site;
- Data Quality Objectives and field and laboratory quality control and quality assurance procedures to be adopted during the remediation works and validation program and how the assessment of the reliability of the results will be presented in the validation report;
- The remedial approach and management options for the groundwater beneath the Site; and
- The approach to be adopted for the "chasing out" of contamination during remediation works.

1.5 Previous Site Audit Statement

To date no SASs have been required to be completed for the Site.

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2.0 Site Audit Process

This Site Audit has been carried out by Bill Ryall who is a Site Auditor accredited by the NSW EPA (Accreditation No. 9809) under the NSW Site Auditor Scheme (Contaminated Land Management [CLM] Act, 1997), and follows the *Guidelines for the NSW Site Auditor Scheme (2nd edition)* published in 2006 by the then NSW Department of Environment & Conservation (NSW DEC) which is now known as the NSW Department of Environment and Climate Change (NSW DECC), which incorporates the NSW EPA as the legal entity with respect to the CLM Act. In completing this Site Audit, the Auditor has been assisted by Ms Rebecca Organo who is an Associate Environmental Scientist employed by ENSR.

The Site Audit process comprises an independent review by a Site Auditor, accredited by the NSW EPA under the CLM Act, of one or more reports of investigation, remediation and validation of a contaminated or potentially contaminated site that have been prepared by an environmental consultant. The audit process and the responsibilities of the Site Auditor are defined in NSW DEC (2006) which include, firstly, preparation of a Site Audit Report, which summarises the results reported by the consultant for assessment, remediation and/or validation programs, as appropriate, and finally, preparation of a Site Audit Statement, which certifies the suitability of the site for one or more land uses.

The investigation of the environmental condition of a site and any remediation that is required is carried out by the environmental consultant by reference to guidelines endorsed by the NSW DECC and if the reports prepared by the consultant are in substantial conformance with the guidelines, the Site Auditor is entitled to accept the results and conclusions stated therein and to complete the Site Audit Report and to issue a Site Audit Statement and/or to form other opinions based on the results and conclusions stated in the report/s by an environmental consultant.

The Site Auditor does not normally carry out independent sampling or chemical analyses of soil, fill, groundwater or other media on the subject site, but relies on the testing and reporting that has been carried out by the environmental consultant if it has been demonstrated to be of adequate reliability by reference to quality indicators listed in the guidelines endorsed by NSW DECC.

It is expressly recognised that, even when a qualified and experienced environmental consulting firm has substantially followed guidelines endorsed by the NSW DECC, unidentified contamination or sub-surface structures may remain present and that the processes of investigation, remediation and validation are statistically based and that no liability is accepted by the Site Auditor for unidentified contamination or sub-surface structures subsequently found to be present on a site which has been subjected to investigation, remediation and validation processes that are in substantial conformance to guidelines endorsed by the NSW DECC. The Audit has not assessed the suitability of any material for disposal from the Site or the heritage, geotechnical or engineering suitability of the Site or the use of groundwater for any beneficial purpose.

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3.0 Site Information

3.1 Site Identification

The RAP stated that the Site was located proximal to Macdonaldtown railway station, approximately 3 km south-west of Sydney CBD. The Site was described as being "roughly triangular in shape, being part of the area referred to as the Macdonaldtown Triangle" and to have an area of 7,732 m². The Site was stated to be bound to the north by railway land, to the south and east by railway corridor and to the west by residential properties with frontages to Burren Street.

The RAP stated that the Site was Part Lot 50 in DP1001467 and was zoned as "Railways Zone" in the Sydney Regional Environmental Plan 26.

The location of the Site and the layout of the Site were presented in Figures 1, 2 and 3 of the RAP and are included as Attachment 1 to this SAR.

Auditor's opinion

The Auditor considers that the RAP adequately described the location and property identifiers for the Site.

3.2 Site Description

The RAP provided a description of the Site, based on its previous use as a gasworks and the current condition of the Site. The RAP stated that the Site was generally a triangular shape, with a rectangular area in the north-west connecting the main triangular Site area with Burren Street. The Site was stated to be vacant, with tall trees at the western and northern boundaries.

Above-ground structures present at the Site were described as follows:

- The heritage-listed Southern Gasholder, against the western Site boundary, standing approximately 12 m above the ground;
- Brickwork, at ground level, associated with the former Northern Gasholder, against the western boundary of the Site, to the north of the Southern Gasholder;
- A small shed, known as the Connection Shed, located in the south-west part of the Site;
- Retaining walls and embankments along the northern boundary of the Site, including the rectangular section of the Site connecting with Burren Street; and
- A concrete service trench and shallow surface stormwater drain at the western boundary of the Site.

In addition, the following features were stated to have been present at the Site, associated with the former gasworks:

- Former Retort House, tar wells, condensers, coal and shale storage areas and other offices / amenities in the northern and central Site areas. Of these features, the tar wells, pipework, brickwork and foundations and concrete slabs were stated to remain in place, underground, at the Site; and

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