

5.7.1 CLM Act

The RAP stated that the Site was currently the subject of Voluntary Investigation Proposal (VIP) 19013 issued on 22 May 2002 and that investigations had been carried out in accordance with the VIP. The RAP stated that one of the purposes of preparing the RAP was to provide RailCorp with a basis for entering a Voluntary Remediation Agreement (VRA) with the NSW EPA. The RAP stated that the VRA would be established by providing a proposal for the remediation to the NSW EPA for their agreement, provided that the terms of the proposal were appropriate. It was stated that this approach was being taken to prevent the NSW EPA issuing a remediation order on the Site under the CLM Act.

Auditor's opinion

The Auditor notes that the Site is not currently subject to a VIP or any other action by NSW EPA under the provisions of the CLM Act. The VIP 19013 was issued in October 2001 and on the 22 May 2002 the NSW EPA gave notice that the terms of the VIP had been satisfied. Notwithstanding this, the Auditor agrees that the remediation of the Site is required and that the best approach is to enter into a VRA with NSW EPA.

5.7.2 EP&A Act, SEPP (Major Projects) 2005 and SEPP 55

The RAP stated that the Site was located within the Redfern-Waterloo Authority Sites which were listed as a State Significant Site in Part 5 of Schedule 3 of the State Environmental Planning Policy (Major Projects) 2005 (SEPP (Major Projects) 2005). It was stated that under Part 5 of Schedule 3 of SEPP (Major Projects) 2005 the proposed remediation works were defined as being a Part 3A project as the works would require a capital investment of greater than \$5 million. As such, it was stated that development approvals for the redevelopment of the Site were controlled under the provisions of Part 3A of the Environmental Planning and Assessment Act, 1979 (EP&A Act) which require that the Minister of Planning is the consent authority for the works.

The RAP also stated that remediation of the Site falls within Category 1 of State Environmental Planning Policy 55 (SEPP 55) (works that require consent) on the basis that the Site is affected by a heritage conservation classification (the Southern Gasholder).

Auditor's opinion

Whilst it is correct to state that the development approval for the Site falls under Part 3A of the EP&A Act, due to the location of the Site within a declared State Significant Site and the potential cost of the remediation works, the Auditor notes that the RAP was incorrect to state that the remediation of the Site is defined as Category 1 remediation works under SEPP 55. Given that the approvals for the remediation will be determined under Part 3A of the EP&A Act and that the consent authority for the remediation works is the Minister for Planning the remediation works are not required to be defined as Category 1 or Category 2 works, under SEPP55. However, the Auditor notes that specific requirements of SEPP 55 including Clause 16 and 17 are still required to be applied for the remediation of the Site.

5.7.3 Heritage Act and SREP 26

The RAP stated that the presence of structures on the Site that were listed on the State Heritage Register under the Heritage Act 1977 (Heritage Act) and as Heritage Items under Schedule 4 of the Sydney Regional Environmental Plan 26 (SREP 26) require that the consent authority, being the Minister for Planning, to seek the input of the relevant Ministers responsible for administering these Acts for comment and recommendations during the approvals process for the remediation works.

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5.7.4 POEO Act, OHS Act and EHC Act

The RAP stated that the remediation works are likely to require an Environment Protection Licence (EPL) under the Protection of the Environment Operations Act, 1997 (POEO Act) on the basis that "contaminated soil treatment works" are listed as a scheduled activity in the POEO Act. As the RAP proposes that contaminated soil may be transported from the Site to a separate treatment site (due to limited Site area) and the treatment site may receive more than 1000m³ of soil in any one year, the RAP states that RailCorp may be required to obtain an EPL under the POEO Act.

The RAP further states that under the POEO Act, a licence would be required for transporting "hazardous, industrial, Group A, Group B or Group C wastes in loads exceeding 200kg". This was stated to be potentially applicable to the transport of contaminated soil from the Site to the proposed treatment site.

The RAP stated that the remediation of materials containing would be undertaken in accordance with the requirements of the Occupational Health and Safety and Regulation 2001 made under the Occupational Health and Safety Act 2000 (OHS Act) and that all asbestos remediation works conducted on the Site would be required to be undertaken by an AS1 (Friable) Licensed Asbestos Removalist.

The RAP stated that the chemicals subject to chemical control orders (CCOs) were not encountered during previous investigations at the Site and were not considered likely to be encountered during the remediation works, therefore, it was stated that the requirements of the Environmentally Hazardous Chemicals Act, 1985 (EHC Act) would not apply.

5.7.5 EPB Act

The RAP stated that the proposed remediation works at the Site would not require approval by the Commonwealth Minister for the Environment under the Environment Protection and Biodiversity Act, 1999 (EPB Act) as no Matters of Environmental Significance (MNES) were located within the Site or were considered likely to arise during the remediation works.

5.7.6 Transport Administration Act, 1988 (TA Act)

The RAP stated that the proposed remediation works are in compliance with the objectives for RailCorp under the TA Act, including the principles of ecologically sustainable development, inter- and intra-generational equity, the precautionary principle and the conservation of biological diversity.

5.8 Approvals and Permits

The RAP identified the permits and approvals required to proceed with the proposed remediation works. These requirements are listed in Table 5 below.

Table 5: Permits and approvals required for remediation works

Area	Requirements
Transportation of contaminated materials	Licence under POEO Act for transportation of hazardous materials (tar)
Asbestos containing materials	Work permit from WorkCover required under OHS Regulation 2001/OHS Act 2000. All asbestos remediation work must be undertaken by a licensed contractor who holds a WorkCover AS1 Friable Asbestos Licence All asbestos waste materials are required to be disposed off-site at a NSW EPA approved landfill facility.
Sewer service line at western boundary of the Site	Application to be lodged with Sydney Water to deviate and reinstate the operational sewer line, requires approval and certification by Sydney Water
Rail services in concrete rough at western boundary	RailCorp approval required prior to excavations
Discharge of water from excavations	Permit from Sydney Water to discharge any waste water to sewer (Trade Waste) or collection and off-site disposal by a licenced liquid waste contractor for treatment/disposal to an appropriately licenced waste treatment/process facility If pre-treatment is required, a permit may also be required for these activities.
Connection of water service	Approval required from Sydney Water
Operation of treatment facility	NSW EPA license required under POEO Act for contaminated soil treatment works as defined under the POEO Act.
Waste disposal	All waste to be disposed of off-site must be classified in accordance with NSW DEC guidelines for disposal at lawful facilities. NSW EPA general approvals for immobilisation of specific contaminants could apply to waste materials from the Site.
Rail Industry Safety Inductions (RISI)	Not required for work on-site. Would be required for works within operational railway corridor areas.
Confined spaces	Training may be required to enter confined spaces at the Site (deep excavations etc).

5.9 Remediation Scope of Works

The RAP stated that the scope of works for the remediation works was as follows:

- 1 Obtain relevant licenses and approvals for remediation works, including any related to the use of an alternate site for treatment;
- 2 Establishment and preparation of the Site as a remediation site, including security, access, site facilities (sheds services etc), setting up of environmental safe-guards, decommissioning existing groundwater monitoring wells, groundwater sampling of

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- retained wells, stripping/shredding of site vegetation, set-up of odour tent and protection of live services;
- 3 Establishment of an alternative treatment site, as per the requirements above;
 - 4 Geotechnical investigation;
 - 5 Underpinning/piling works to be conducted in and around heritage structures and in the areas that will require deep excavation;
 - 6 Removal of contaminated materials (this was proposed to be carried out in a staged manner and areas for staged removal were colour-coded on Figure 4 of the RAP):
 - a) "Remove contents from tar wells;
 - b) Remove contents on Northern Gasholder
 - c) Excavate surface ash/coke fill from pink and orange areas (see Figure 4);
 - d) Excavated tar source area around Northern Gasholder and tar wells (pink areas) to benching level of approximately 3-4 m bgs). Consideration to be given to archaeological monitoring, oversize materials, pipework and dewatering;
 - e) Begin benching excavation at 3-4 m depth within tar impacted soils (orange area). Consideration to be given to archaeological monitoring, oversize materials, pipework and dewatering;
 - f) Complete excavations indicated above in stage d to nominated depth (at least 8 m bgs). Validate and backfill completed excavations;
 - g) Continue benching excavations indicated above in stage e;
 - h) Excavated deep tar impacts at BHE/BHF (pink area on Figure 4). Consideration to be given to archaeological monitoring, oversize materials, pipework and dewatering. Validate and backfill completed excavations;
 - i) Complete excavations in stage e to limits of orange area on Figure 4 (validation and backfilling undertaken in stage m);
 - j) Excavate contaminated hotspots (MW13s, MW04s and BH14 – green areas on Figure 4). Consideration to be given to archaeological monitoring, oversize materials, pipework and dewatering. Validate and backfill excavations;
 - k) Excavate contamination hotspot (TP16 – within green area on Figure 4). Consideration to be given to archaeological monitoring, oversize materials, pipework and dewatering. Validate and backfill excavations (including those indicated above in stage j);
 - l) Remove impacted material, to the extent practicable, from the retaining wall; and
 - m) Validate and backfill all existing surfaces to site level".
 - 7 Continual water treatment, stockpiling, loading and haulage of material off site.
 - 8 Preparation of a long-term EMP including a GMP with a MNA approach to ensure the suitability of the Site for the proposed use.

Auditor's opinion

The Auditor considers that the scope of works for the remediation of the Site presented in the RAP is appropriate to achieve the remediation goals for the Site.

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However, the Auditor requires that where removal of contamination is likely to be constrained by Site features or by other limitations, and may have to remain in-situ following the remediation works (i.e. remediation is undertaken to the extent practicable), that this be clearly stated in the Sampling Plans that are to be developed for the validation works for the Site (see Section 6 of this SAR). In addition, management procedures to be implemented at the Site to minimise or mitigate risks from remaining contamination would be required to be documented in the long-term EMP for the Site.

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 area of the Site at the same time and that the staging of the remediation works may impact the validation works and the ability for the Site to be validated in a staged manner so that the Auditor could issue a SAS certifying the suitability of that stage for the proposed use. In addition, it is the Auditor's opinion that a SAS will not be able to be issued for the Site until a satisfactory long-term EMP has been developed and agreed to by these parties.

5.10 Remediation Methodology

The RAP presented the methodologies relating to the various components of the remediation works. A summary of the work methodologies is provided below.

5.10.1 Preliminary Works

The RAP stated that prior to commencement of remedial works all licencing and permits (as listed in Section 5.8 above) would need to be obtained and a Remediation Environmental Management Plan (REMP) for the remediation works would need to be developed that identified the environmental hazards and risk involved with the remediation and the control measures required to mitigate those risks.

An overview of the requirements for the EMP for the remediation works was provided in Section 8 of the RAP and is addressed in Section 5.12.1 of this SAR.

The RAP stated that the preliminary works required for the Site prior to commencement of remediation would include the establishment of access points, security, site facilities including sheds, decontamination facilities and water treatment unit, utilities and heavy vehicle haulage routes. It was stated that it would also be necessary to protect and stabilise the heritage structures and existing services that were required to be retained prior to commencement of remediation works in those areas.

The RAP also stated that the proposed remedial activities associated with the stabilisation and/or treatment of significantly contaminated soils would require an area of between 3000 to 5000 m³. The RAP estimated that due to the likely the extent of excavations across the Site, the requirements to protect the heritage structures and the space required to accommodate the infrastructure associated with the remedial works, that there would not be sufficient area remaining on the Site to accommodate the treatment activities. Given this, the RAP stated that an alternative site for the treatment of contaminated soils would be required to be identified and that all necessary approvals, licences, management and controls would also need to be established for the alternative treatment site prior to the commencement of the remedial works.

The RAP also stated that prior to remediation works commencing on the Site, the existing groundwater wells would require decommissioning in accordance with the procedures provided in the Land and Water Biodiversity Committee *Minimum Construction Requirements for Water Bores in Australia* (LWBC, 2003).

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Auditor's opinion

The Auditor considers that the RAP appropriately considered and presented the preliminary works that would be required on the Site prior to the commencement of remedial works.

5.10.2 Removal of Liquid Wastes

The RAP stated that the majority of liquid wastes at the Site were present within the tar wells and gasholders. It was stated that the liquids present in the tar wells were classified as coal tar sludge or free tar and that the liquids present in the gasholders were classified as "impacted waters". It was also stated that it was likely that the liquids present at the base of the Northern Gasholder would contain coal tar sludge. The RAP stated that the free-flowing liquids and sediments would be removed by a specialised vacuum truck and that for the coal tars or free tars pre-treatment, such as heating or addition of additives such as fly ash, may be required to facilitate vacuum removal. It was stated that the liquid wastes would be transported within the vacuum trucks for disposal off-site to an appropriately licensed waste facility.

5.10.3 Excavation Works

The RAP stated that the excavation of the contaminated fill materials and natural soils would require the use of excavators with the capacity to reach and excavate the stiff clays and shales present at depth and would also require the use of piling and/or shoring machinery and equipment to stabilise excavated areas particularly the expected deep excavations areas around the Southern Gasholder and the western and northern boundaries of the Site.

The RAP stated that previous archaeological assessments indicated that due to the presence of significant contamination that only the Southern Gasholder could be retained on the Site. It was stated that excavation works were to be undertaken in conjunction with archaeological monitoring to ensure that any potential impact from the excavation works to the Southern Gasholder structure would be mitigated or minimised. It was stated that the remaining brick annulus of the Northern Gasholder, the connection shed, the remaining brick layers and foundation footings of the Retort floor, retaining wall, tar wells and sand condensate pit were to be demolished and removed during the excavation works.

It was stated that previous archaeological assessments indicated that the concrete slabs present on the northern boundary of the Site do not have historical significance, but that the retention of this slab would maintain the stability of the northern boundary embankment. The RAP stated that an assessment for the presence of contamination and the requirements, if any, for remediation of this area would be conducted prior to determining whether the slab could be retained.

The RAP also stated that if oversized materials, pipework or other structures that contained free tar materials were encountered, that these materials were to be stored separately from the excavated contaminated soil materials.

The RAP stated that "Formed excavation will require surveying to determine quantities of material removed and, in turn, backfill requirements". It was also stated that the survey should include all retained structures and site features.

5.10.4 Waste Classification

The RAP stated that as part of previous investigations conducted at the Site (CH2MHILL, 2007) preliminary waste classifications were conducted in accordance with NSW EPA (1999). The results of the preliminary classifications were stated as follows:

- Fill materials and natural soils located within the former gasworks area of the Site that contain significant quantities of free tar were generally classified as "hazardous waste" due to the concentrations of B(a)P and PAHs in these materials;
- Fill materials and natural soils located within the former gasworks area of the Site that were defined as tar-impacted materials were classified as either "hazardous or industrial waste dependant on the degree of impact";
- Surface fill materials containing ash and/or coke were classified as "hazardous waste primarily based on the concentrations of B(a)P" in these materials;
- Materials buried within the annulus of the Northern Gasholder were classified as "industrial waste" due to the leachate concentrations of lead and the presence of materials containing asbestos;
- General fill materials located in areas of the Site not occupied by the former gasworks were classified as either "solid or inert waste"; and
- Fill materials present in the retaining wall that contained materials containing asbestos were classified as "asbestos impacted solid waste material"

Further to the above, the RAP stated that two NSW EPA General Approvals for Immobilisation could be applied to materials to be excavated from the Site as follows:

- Approval No. 1999/05 applicable for ash, ash-contaminated natural excavated materials or coal-contaminated excavated materials – To be applied to surface fill materials containing ash and/or coke. The RAP stated that if this approval was applied these materials could potentially be reclassified from "hazardous waste" to "solid waste";
- Approval No. 2005/14 applicable for coal-tar contaminated soils from former gasworks sites – To be applied to tar contaminated materials excavated from the Site. The RAP stated that if this approval was applied these materials could potentially be reclassified from "hazardous waste" to "solid or industrial waste".

Copies of the General Approvals were included as Appendix E to the RAP.

The RAP stated that during the remediation works the materials excavated from the Site would be stockpiled according to the material type and with reference to the preliminary classifications provided above. It was stated that the stockpiled materials would then be sampled for classification in accordance with the NSW EPA (1999) and the NSW EPA immobilisation approvals (as detailed above) where applicable, for the purposes of determining the requirements for either direct off-site disposal or whether they would require stabilisation and/or treatment prior to classification for off-site disposal.

Auditor's opinion

The Auditor notes that in April 2008 NSW DECC released the new *Waste Classification Guidelines* which now supercede the NSW EPA (1999) referred to in the RAP. All waste materials generated in NSW must now be classified in accordance with NSW DECC (2008) and these guidelines are required to be implemented during the remediation of the Site. The Auditor notes that the General Approvals for