

Visual Impact Assessment

**Soil Treatment Area, Chullora Railway
Workshop Facility**



Incoll Management Pty Ltd on behalf of
Rail Corporation NSW

**Former Macdonaldtown Gasworks
Burren St
ERSKINEVILLE, NSW**

JBS 40913 – 15136 (Revision 2)
August 2011
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List of Abbreviations

A list of the common abbreviations used throughout this report is provided below.

- As Arsenic
- Cd Cadmium
- Cr Chromium
- Cu Copper
- BTEX Benzene, Toluene, Ethylbenzene and Xylenes
- B(a)P Benzo (a) pyrene
- DCE Cis-1,2-dichloroethene
- DECC NSW Department of Environment and Climate Change
- DoP NSW Department of Planning
- DP Deposited Plan
- DQO Data Quality Objectives
- DWE NSW Department of Water and Energy
- EPA NSW Environment Protection Authority
- Hg Mercury
- HIL Health Based Investigation Level
- LOR Limit of Reporting
- MAH Monocyclic Aromatic Hydrocarbon
- Ni Nickel
- OCP Organochlorine Pesticide
- PCE Tetrachloroethene
- SAR Site Audit Report
- SAS Site Audit Statement
- PAH Polycyclic Aromatic Hydrocarbons
- Pb Lead
- PIL Phytotoxicity Based Investigation Level
- PCB Polychlorinated Biphenyls
- PQL Practical Quantitation Limit
- QA/QC Quality Assurance/Quality Control
- RPD Relative Percentage Difference
- TCE Trichloroethene
- TPH Total Petroleum Hydrocarbons (C₆-C₉ and C₁₀-C₃₆)
- VC Vinyl Chloride
- VOC Volatile Organic Compound
- Zn Zinc

Executive Summary

JBS Environmental Pty Ltd (JBS) was engaged by Incoll Management Pty Ltd (Incoll) on behalf of the Rail Corporation NSW Environmental Projects Unit (RailCorp) to prepare a visual impact assessment (VIA) of soil treatment works at the Chullora Railway Workshop (CRW) facility.

An assessment of the visual impacts at the CRW facility has been undertaken as part of planning for the remediation works at the former gasworks site at Macdonaldtown. An area contained wholly within the CRW facility has been identified as a potential location for the treatment of soil from the Macdonaldtown site. The works planned for the CRW facility will be temporary only. A range of activities that may be undertaken in this area has been considered in this VIA including:

- Importation, handling and stockpiling of contaminated soils;
- Treatment of soils on-site by stabilisation / immobilisation, thermal desorption and/or bioremediation; and
- Removal of treated soil off site.

Based on the assessment, the Visual Impact rating of the treatment area following completion of the works is 'low'. In the context of the proposed treatment works this means that the area does not contain items of heritage or environmental significance, and the landscape at the project completion will not be concealed or devalued.

Based on the assessment, the Visual Impact rating of the site during remediation from all 4 affected external viewing positions is 'Low'. In the context of the proposed treatment works, this means that the scenic value of the area or views afforded of it will not be devalued from these external viewing locations for the duration of the project.

Nonetheless a number of mitigation measures have been recommended to limit the magnitude of any impact to users of property adjacent to the eastern Railway Workshops site boundary. These include:

- Community consultation with the potentially affected parties to inform them of the proposed staging of works and likely impacts. The consultation process should benefit from emphasising the temporary nature of the proposed works, and similar conditions to be reinstated on completion;
- Minimise disturbance to established tree lines along the Railway Workshop boundary, to maintain the existing buffers and visual screen at ground level to the treatment works;
- Maintenance of dust mitigation measures, surface runoff controls and general site housekeeping at all times to enhance the visual quality of the area; and
- Truck loading areas used within CRW area should be located away from the adjacent eastern properties.

1 Introduction

1.1 Introduction and Background

JBS Environmental Pty Ltd (JBS) was engaged by Incoll Management Pty Ltd (Incoll) on behalf of the Rail Corporation NSW Environmental Projects Unit (RailCorp) to prepare a Visual Impact Assessment (VIA) for the Chullora Railway Workshops (CRW). The VIA is to accompany an Environmental Impact Assessment (EIA) for the proposed remediation of the former Macdonaldtown Gasworks site in Erskineville, NSW. The CRW facility will be utilised in the event that the volume of soil requiring treatment exceeds the on site capacity, and/or if thermal desorption treatment methods are to be used.

Based on the findings of the VIA, mitigation measures are identified to control or minimise the potential visual impacts that may be generated from the material handling works proposed for the CRW site.

In August 2000 the former Macdonaldtown Gasworks was declared by the NSW Environment Protection Authority (EPA) to pose a Significant Risk of Harm (SRoH) to human health and the environment. The declaration was made in consideration of the concentrations of contaminants in the soil and groundwater reported in previous environmental site assessments.

It is understood that RailCorp wish to remediate the Macdonaldtown site to a condition that:

- Reduces health risks to future commercial / industrial users to an acceptable level;
- Reduces the potential risks to the surrounding environment to an acceptable level;
- Facilitates its beneficial use for a future commercial / industrial use as consistent with current rail activities; and
- Results in the removal of the SRoH declaration.

1.2 Objectives

The objectives of this VIA are to:

- Identify the existing environment and establish what modifications are proposed as part of the treatment works proposed at the CRW site;
- Establish the visibility of the proposed treatment area, and in particular the visibility of those modifications proposed for the duration of the treatment works; and
- Evaluate the visual impact of the proposed works as viewed from various off-site locations.

The objectives have been completed by inspection of the site from within its boundaries and from various off site locations. Photographs and montages have been used to document the current landscapes and simulated profiles.

It is noted that the VIA is focussed on the works proposed for the Chullora site only. A separate VIA has been prepared for all other remediation works to be undertaken on the

Macdonaldtown site, and has been documented in the JBS Report '*Visual Impact Assessment, Remediation of the Former Macdonaldtown Gasworks Site*' Report 40913-15136, dated July 2010.

1.3 Reports Relied Upon

The following reports, not prepared by JBS, have been referenced in completing the VIA for the Chullora site:

- CH2M Hill Australia Pty Ltd (December 2007b) '*Remedial Action Plan, Former Macdonaldtown Gasworks – Burren Street, Erskineville, NSW*', Reference 359092; and
- Heritage Concepts (November 2006) '*Archaeological Assessment and Remediation Management Strategy*'.

2 Site Condition & Surrounding Environment

The proposed treatment area is contained wholly within the RailCorp CRW facility, which is located off Worth St, Chullora, NSW. The treatment area is located in the eastern portion of the CRW site, and is irregularly shaped, having a longer north-south dimension than east-west, with an area of approximately 2.3 hectares. The site location is shown in **Figure 1**. The site details are summarised in **Table 2.1** and described in more detail in the following sections.

Table 2.1 Summary Site Details

Lot/DP	Part of Lot 1 in DP 883526
Address	Off Worth St, Chullora
Geographical Coordinates	320681 E 6248891 N
Local Government Authority	Strathfield Council
Current Use	Railway materials storage
Site Area	Approximately 2.3 ha

A site plan showing the site is shown on **Figure 2**.

2.1 Current Site Condition

The site is currently cleared, open land, with an area of approximately 2.3 hectares. It is generally flat, with a slight slope to the north, and the surface is gravelled. There is minimal vegetation, with trees present outside the southern border, and there are no permanent site structures present. The site is currently used for the temporary storage of railway materials including sleepers and rails. A panorama of the site taken in July 2010, from the top of the eastern embankment adjacent to the proposed treatment area is shown in **Figure 3**.

2.2 Surrounding Landuse

Surrounding land-uses include:

- North – The railway corridor lies directly north of the CRW site. Beyond the railway corridor, Strathfield Golf Course is present. Rookwood Cemetery is present to the northwest;
- East – The railway corridor lies to the east of the CRW site. Beyond the railway corridor, there are one to four storey brick residential properties present on Marlene Crescent, and a commercial warehouse;
- South – the treatment area is bordered by trees to the south, before the railway corridor. Beyond this, the Hume Highway is present, and residential properties are present along the southern side of the highway; and
- West – The remainder of the CRW site is present to the west.

2.3 Topography

The site is generally flat with a slight decline towards the north. The immediately surrounding area climbs steeply to the south and east, while the general area declines towards the Cooks River to the north and northwest of the site.

2.4 Geology

Review of the Sydney Geological Series Sheet 9130 (DoM, 1983¹) indicates that the geological formation underlying the Site is the Wianamatta Group Bringelly Shale comprising shale, carbonaceous claystone, laminite, fine to medium grained lithic sandstone, and rare coal.

Review of the Sydney Soil Landscape Series Sheet 9130 (G. A. Chapman et. Al, 1989) indicates that soils at the site are part of a disturbed landscape, extensively altered by human activity including complete disturbance, removal or burial of soils. The landscape, soils and limitations will vary.

¹ Sydney 1:100,000 Geological Series Sheet 9130, Edition 1, Department of Mineral Resources, 1983 (DoM 1983)

3 Summary of Proposed Works

3.1 Proposed Future Use

The use of part of the CRW site for treatment of materials, is intended to be temporary, and for the duration of the Macdonaldtown Gasworks remediation only. The proposed treatment works are also intended to occupy a limited section of the CRW facility.

On completion of the proposed works, all materials imported onto the CRW facility for the purposes of treatment, including plant, soil material and newly constructed treatment facilities, will be removed off site. The intention would be to vacate the portion of the CRW facility used, in a condition similar to its pre-treatment works state.

3.2 Proposed Treatment Works

- Receipt of contaminated soils / materials from the Macdonaldtown former gasworks remediation;
- Storage of contaminated soils / materials within stockpiles or similar;
- Treatment / remediation of contaminated soils / materials by thermal desorption;
- Treatment of contaminated soils / materials by immobilisation / stabilisation;
- Treatment of contaminated soils by bioremediation, typically within biopiles or landfarms.

By review of the remediation works at the Macdonaldtown site, the quantities of highly contaminated soils (i.e. classified above 'general solid waste' in NSW DECC 2009 Waste Classification Guidelines) are summarised in **Table 3.1**.

Table 3.1: Summary of Remediation Volumes

Description	Volume	Indicative Waste Classification
Soils impacted with PAHs, TPH C ₁₀₋₃₆ , heavy metals, asbestos containing materials and demolition wastes	1,900m ³	Restricted Solid
Soils impacted with coal tar. Potentially malodorous.	14,820m ³	Restricted Solid / Hazardous
Tar	420m ³	Hazardous
Tar Impacted water (known).	640m ³	Hazardous liquid waste

Though tar impacted water is present on the Macdonaldtown site, it is considered unlikely that transfer of liquid wastes to the Chullora site will be feasible. These have not been considered in this VIA.

Based on these anticipated tasks and volumes, **Figure 4** displays a simulated view of the anticipated treatment works on the allocated area.

4 Visual Assessment

4.1 Assessment of Visual Impact

The visual impact of the proposed works has been determined by rating the scenic quality to the viewer with the visual absorption capacity. This rating system is widely used in VIAs and is based on the method documented in US Federal Highway Administrations (FHWA) '*Visual Impact Assessment for Highway Projects*' (1981).

4.1.1 Visual Absorption Capacity

The visual absorption capacity can be described as the amount of change can accommodate without adversely affecting the desired character of the surrounding landscape. The visual absorption capacity may vary across the site depending on likely visual impacts of the activity under assessment and its broader context. For the purposes of this study, qualitative criteria listed below have been used to assess the Visual Absorption Capacity:

- **High** – existing landscape / built environment able to absorb development with no or minimal obstruction to significant views or desired character;
- **Moderate** – existing landscape / built environment able to absorb some development with moderate obstruction to significant views and desired landscape character; or
- **Low** – existing landscape / built environment unable to absorb development without a high degree of obstruction to significant views and desired landscape character.

4.1.2 Scenic Quality

For the purposes of the current study, descriptions of scenic quality have been qualified in the following categories:

- **High** – areas with a diversity of landscape elements or areas with visually prominent features of land form which may include ridgelines, escarpments, visually significant vegetations, geological formations, waterways, heritage items, villages, city skylines or streetscape. Views from an elevated position are also usually of high scenic value;
- **Moderate** – areas of land form or built features which tend to be common throughout the region and are not outstanding in visual quality; or
- **Low** – areas with features of minimal diversity or variety.

4.2 Visual Impact Rating

By combining the ratings of these two elements, the assessment ensures that emotional responses to scenic quality are considered with respect to the capacity for change to be integrated into the landscape.

The Visual Impact ratings shown in the following sections are described as:

- **High** – activities within this rating are anticipated as likely to have significant visual impact upon the scenic quality of the urban landscape;
- **Moderate** – activities within this rating are anticipated to have a visual impact upon a limited area at a local scale and may be mitigated during the detailed design stage; or
- **Low** – activities in this rating are anticipated to not have significant visual impact.

4.3 Existing Visual Character of the Area

The 2.3 Ha section of land potentially available for the treatment works is wholly contained within the CRW facility, located off Worth Street in Chullora. Therefore rail lines and/or railway workshop facilities are present immediately surrounding the treatment area in all directions. In terms of landscape type, these areas are considered to be a highly modified landscape – urban industrial, with a typical transport infrastructure visual appearance.

Further north of CRW facility are the Rookwood Cemetery and Strathfield Golf Club, while to the south-west various industrial premises are present, including newspaper printing centres and a small goods manufacturing plant. In terms of landscape type, these areas are considered to be a highly modified landscape – urban industrial, with a visual appearance which is a combination of commercial and infrastructure.

High and medium density urban development is present to the south and east of the CRW. In terms of landscape type, these areas considered to be a highly modified landscape – urban- industrial, with a fully developed residential visual appearance.

4.4 Identification of Near-Field Receptors

Land to the north, west and south of the Chullora Railway workshops is present at a similar elevation, and thus views into the Workshops, and treatment area, are restricted by the presence of established tree line buffers along its periphery. Unrestricted views of the Chullora Railway workshops, and thus, of the treatment area, potentially exist from the residences present to the east on Marlene Crescent, which is situated on elevated ground more than 10 metres above the level of the workshops. The western side of Marlene Crescent, in particular, potentially affords unrestricted views of the Railway Workshops to residents on the first floor or above.

Locations offering views of the treatment area are shown on **Figure 1** and listed in **Table 4.1**.

Table 4.1: Summary of Receptors

No.	Description	Approx. distance from Site	Approx. Easting	Approx. Northing	Visual Screen restricting view of site
1	Multi-storey residences on Marlene Crescent	100m East	332244	6247859	No
2	Rookwood Cemetery and Strathfield Golf Course	150m North	332263	6247744	Yes – vegetation screens along CRW boundaries
3	Printing and small goods manufacturing plant	300m South West	332269	6247645	Yes – vegetation screens along CRW boundaries
4	Hume Highway commercial and residential premises	150m South	332342	6247537	Yes – vegetation screens along CRW boundaries

4.5 Visual Impact of the Proposed Treatment Works

In the long term the proposed treatment works will not impact the visual character of the CRW facility or surrounding area. No below ground earthworks are proposed within the treatment area, and all material imported for the works, including the material to be

treated along with materials to be used for the treatment, will be removed upon completion.

The visual absorption capacity of the surrounding landscape is rated as 'High'. The highest Scenic Quality of the area for potential viewers is rated as 'moderate', and is based on the elevated view of the area, potentially available to selected Marlene Crescent residents. As listed in **Table 4.1**, views into the site from all other angles will be subject to screening. The resulting Visual Impact Rating for the treatment area at the completion of works is provided below in **Table 4.2**:

Table 4.2: Visual Impact Rating of the Site following completion of Treatment Works

Visual Impact Rating		Scenic Quality Rating		
		Low	Moderate	High
Visual Absorption Capacity Rating	Low	Moderate	High	High
	Moderate	Low	Moderate	High
	High	Low	Low	Moderate

Based on the matrix shown the Visual Impact rating of the site following remediation is 'Low'. In the context of the proposed treatment works this means that the area does not contain items of heritage or environmental significance, and the landscape at the project completion will not be concealed or devalued.

4.6 Visual Impact During the Proposed Treatment works

Site works are likely to extend no higher than 10m above the existing grade, noting that soils stockpiles are generally limited to a height no greater than 5m. Where possible, all other material or plants used on site should be kept below the level of the surrounding CRW buildings to the west, for consistency in the visual impact and to allow the works to be viewed as integrated into the layout of the greater Railway Workshops site.

As listed in **Table 4.1**, the substantial tree buffers around the larger Chullora Railway Workshop facility will screen views of the treatment works from viewers to the north, west and south of the works area. Additionally the long distances between the treatment area and these potential viewing locations, combined with the similar ground elevation in the area, indicates that potential views of the remediation works will not impact views from the north, west and south. The screened views of the site from these locations are shown on **Figure 6**.

The visual absorption capacity of the surrounding landscape from all of the above viewing positions (Nos 2,3 and 4 listed in **Table 4.1**) is rated as 'High' based on existing high density urban development in their immediate vicinities. The highest Scenic Quality of the site for potential viewers from each of these positions is rated as 'low' based on the absence of elevated viewing positions. The resulting Visual Impact Rating for the treatment works for these viewing locations is provided below in **Table 4.3**:

Table 4.3: Visual Impact Rating of the Treatment Area – Viewing Positions 2, 3 and 4.

Visual Impact Rating		Scenic Quality Rating		
		Low	Moderate	High
Visual Absorption Capacity Rating	Low	Moderate	High	High
	Moderate	Low	Moderate	High
	High	Low	Low	Moderate

Based on the matrix shown the Visual Impact rating of the site during remediation from viewing positions 2, 3 and 4 is 'Low'. In the context of the proposed treatment works, this means that the scenic value of the area will not be devalued from these external viewing locations for its duration.

As shown in the simulated views in **Figure 5** the proposed works will result in more bulk visible in the treatment area from the elevated eastern end compared to current conditions, and will potentially impact views from for selected Marlene Crescent residents.

The visual absorption capacity of the surrounding landscape from the properties on the eastern boundary of the site, Location No. 1 as listed in **Table 4.1**, is rated as 'High' based on the treatment area forming only a small portion of a much larger aspect. The Scenic Quality of the site from this position is rated as 'moderate' based solely on the elevated position of this view. The resulting Visual Impact Rating for the remediation works for these viewing locations is provided below in **Table 4.4**:

Table 4.4: Visual Impact Rating of the Site during Remediation – Viewing Position 1

Visual Impact Rating		Scenic Quality Rating		
		Low	Moderate	High
Visual Absorption Capacity Rating	Low	Moderate	High	High
	Moderate	Low	Moderate	High
	High	Low	Low	Moderate

Based on the matrix shown the Visual Impact rating of the site during treatment from viewing position 4 is 'Low'. In the context of the proposed treatment works, this means that the scenic value of the site and views afforded will not be devalued from this external viewing location for the duration.

5 Mitigation Measures

The assessment of visual impact indicates that users of sites in the vicinity of the CRW will be subject to 'low' visual impact for the duration of any soil treatment works on the site.

Despite the low potential for visual impact to occur, it is recommended the following mitigation measures are proposed to minimise the limited impacts if any:

- Community consultation with the potentially affected parties to inform them of the proposed staging of works and likely impacts. The consultation process should benefit from emphasising the temporary nature of the proposed works, and similar conditions to be reinstated on completion;
- Minimise disturbance to established tree lines along the Railway Workshop boundary, to maintain the existing buffers and visual screen at ground level to the treatment works;
- Maintenance of dust mitigation measures, surface runoff controls and general site housekeeping at all times to enhance the visual quality of the area; and
- Vehicle entry gates and of truck loading areas to be located away from the adjacent eastern properties if possible.

6 Conclusions and Recommendations

An assessment of the visual impacts of soil treatment works at the CRW facility has been undertaken, as part of planning for the remediation works at the former gasworks site at Macdonaldtown. An area contained wholly within the CRW facility has been identified as a potential location for the treatment of soil from the Macdonaldtown site, and a range of activities that may be undertaken in this area has been considered in this VIA including:

- Importation, handling and stockpiling of contaminated soils;
- Treatment of soils on-site by stabilisation / immobilisation; and
- Removal of treated soil off site.

Based on the assessment, the Visual Impact rating of the treatment area following completion of the works is 'low'. In the context of the proposed treatment works this means that the area does not contain items of heritage or environmental significance, and the landscape at the project completion will not be concealed or devalued.

Based on the assessment, the Visual Impact rating of the site during remediation from all 4 affected external viewing positions is 'Low'. In the context of the proposed treatment works, this means that the scenic value of the area or views afforded of it will not be devalued from these external viewing locations for the duration.

Nonetheless a number of mitigation measures have been recommended to limit the magnitude of any impact to users of property adjacent to the eastern Railway Workshops site boundary. These include:

- Community consultation with the potentially affected parties to inform them of the proposed staging of works and likely impacts. The consultation process should benefit from emphasising the temporary nature of the proposed works, and similar conditions to be reinstated on completion;
- Minimise disturbance to established tree lines along the Railway Workshop boundary, to maintain the existing buffers and visual screen at ground level to the treatment works;
- Maintenance of dust mitigation measures, surface runoff controls and general site housekeeping at all times to enhance the visual quality of the area; and
- Truck loading areas used within CRW area should be located away from the adjacent eastern properties.

7 References

- CH2M Hill Australia Pty Ltd (December 2007b) '*Remedial Action Plan, Former Macdonaldtown Gasworks – Burren Street, Erskineville, NSW*', Reference 359092;
- DEC (2005) 'Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW'
- DEC (2006) 'Action for Air – the NSW Government's 25-year Air Quality Management Plan'
- DEC (2006) 'Assessment and management of odour from stationary sources in NSW'
- Dickson Rothschild (July 2007) '*Macdonaldtown Gas works Site, Concept Design Landscape Report*'
- Heritage Concepts (November 2006) '*Archaeological Assessment and Remediation Management Strategy*'
- US Federal Highway Administrations (FHWA) '*Visual Impact Assessment for Highway Projects*' (1981)

8 Limitations

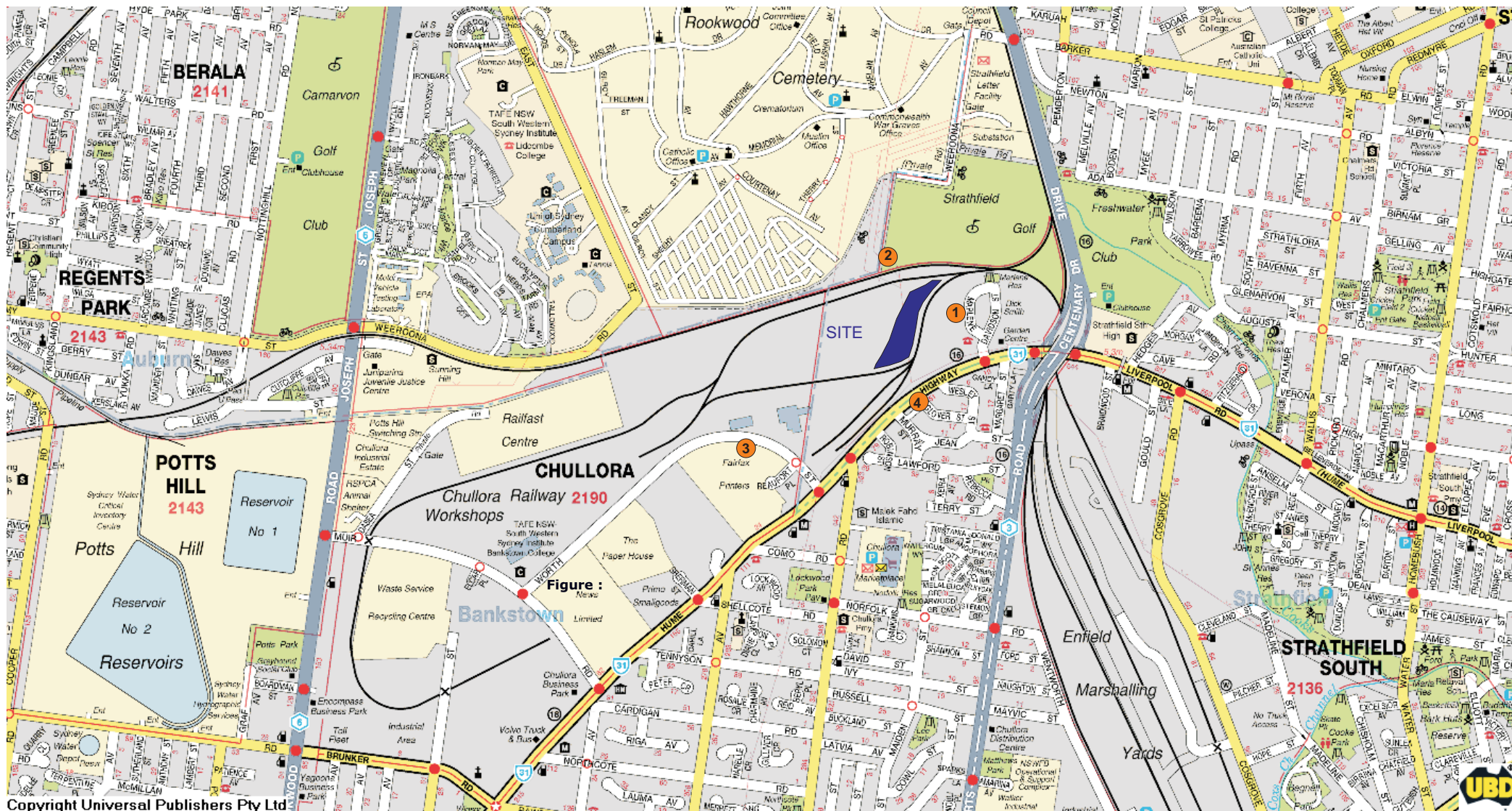
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This report does not provide a complete assessment of the potential hazards associated with the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of potential hazards, JBS Environmental Pty Ltd reserves the right to review the report in the context of the additional information.

Figures

Figures



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LEGEND

- 1 Potential External Viewing Location of the site - Marlene Street residences
- 2 Potential External Viewing Location of the site - Strathfield Golf Club and Rookwood Cemetery
- 3 Potential External Viewing Location of the site - Printing Facilities & Smallgoods Manufacturing Plant
- 4 Potential External Viewing Location of the site - Hume Highway Commercial & Residential Properties



Figure 1: Site Locality Map and Context

Client: Incoll Management Job Number: 40913

Project: Visual Impact Assessment

Site: Chullora Railway Workshop

File Name: 40913 R07 Figure 1



0 100m
Approximate scale



Figure 2: Site Plan

Client: Incoll Management	Job Number: 40913
Project: Visual Impact Assessment	
Site: Chullora Railway Workshop	
File Name: 40913 R07 Figure 2	



View of Treatment Area, taken from the east,
atop embankment forming eastern boundary
of the Chullora Railway Workshops Facility



**Figure 3: Pre-Treatment
Works View of site**

Client: Incoll Management Job Number: 40913

Project: Visual Impact Assessment

Site: Chullora Railway Workshops Facility

File Name: 40913 R07 Figure 3



Simulated view of Treatment Area from the east




View towards Treatment Area, taken from the south (external viewing location 4), on the Hume Highway between Glover and Wesley Streets. Vegetation provides a screen to works inside CRW facility



View towards Treatment Area, taken from the south-west (external viewing location 3), on the Worth Street and Beaufort Place roundabout. Vegetation provides a screen to works inside CRW facility





View towards Treatment Area, taken from the north (external viewing location 2), on Weeroona Road, adjacent to the Rookwood Cemetary. Vegetation provides a screen to works inside CRW facility

 Figure 5: Views towards site from Potential External Viewing Locations 2, 3 and 4	
Client: Incoll Management	Job Number: 40913
Project: Visual Impact Assessment	
Site: Chullora Railway Workshops Facility	
File Name: 40913 R07 Figure 3	

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2	Sumi Dorairaj	Charlie Furr	Charlie Furr		28/08/11



128 O'Riordan Street
Mascot NSW 2020
Tel: +61 2 8338 1011
Fax: +61 2 8338 1700

www.jbsgroup.com.au