NSW Department of Planning and Environment
Preliminary Site Investigation

Arncliffe Priority Precinct

21 August 2015
50299/100611 (Rev 0)
JBS&G

www.jbsg.com.au

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List of Abbreviations

ACM	Asbestos Containing Material
AEC	Areas of environmental concern
AHD	Australian Height Datum
B(a)P	Benzo(a)pyrene
BTEX	benzene, toluene, ethylbenzene, xylenes
COC	Chain of Custody
COPC	Contaminant of potential concern
CSM	Conceptual site model
DP	Deposited Plan
DWE	NSW Department of Water and Energy
EPA	NSW Environment Protection Authority
ESA	Environmental Site Assessment
ha	Hectare
JBS&G	JBS&G Australia Pty Ltd
OEH	Office of Environment and Heritage
OCP	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PSI	Preliminary Site Investigation
SEPP	Statement Environmental Planning Policy
TPH	Total Petroleum Hydrocarbons

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by the NSW Department of Planning and Environment (the client) to provide environmental services to support the planning of the Arncliffe and Banksia Priority Precincts, NSW, located as shown on **Figures 1 and 2.**

The Arncliffe Priority Precinct (Precinct) is centred on the Arncliffe railway station. Some preliminary planning work has been undertaken between Wolli Creek and Rockdale during development of the Princes Highway Corridor Strategy adopted by Rockdale City Council in September 2013.

The objective of this assessment was to identify and document the potential for contamination, based on a site history review, review of any previous investigations and observations made during inspection of accessible areas within the Precinct.

The scope of work comprised a review of the environmental setting and historical documentation to identify potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs) and specifically within the opportunity sites and preparation of this ESA report.

The Precinct has many minor roads extending through it servicing the various residential and commercial properties in the area, however, the main roads are Princes Highway, Forest Road, Wickham Street, and West Botany Road.

The Precinct contained various site uses including a train station, various open space parkland areas, residential and commercial properties such as vehicle repair, service stations, car sale yards etc. The site inspection identified specific properties such as the City Ford, Arncliffe Park, Schools, steel fabricator, concrete recyclers, 7/11 Service Station and an independent service station, as well as numerous new residential developments.

A review of historical land uses specific to a number of identified typical potential redevelopment sites situated within the Precinct suggested the portions of the Precinct have historically been used for market gardening, possibly a quarry for road materials, vehicle sales and maintenance operations, metal fabrication and associated manufacturing and textile purposes.

The potential AECs and associated COPCs that were identified as part of the site inspection and historical review are shown in **Table 1** below.

Table 1 Areas of Environmental Concern and Associated Contaminants of Potential Concern

Area of Environmental Concern	Contaminants of Potential Concern
Fill material used to obtain existing ground levels	Heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos
Vacant blocks (illegal dumping/filling)	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Former Market Gardens	OCPs, organophosphate pesticides (OPPs), heavy metals
Service Stations and underground petroleum storage on industrial/commercial properties	Heavy metals, TPH, BTEX, PAHs
Railway	Heavy metals, TPH, BTEX, PAHs
Steel Fabricators	Heavy metals, TPH, BTEX, volatile organic compounds (VOCs), cyanide
Former Site Building Structures	Asbestos, lead paint, synthetic mineral fibres
Schools	Asbestos, lead paint, synthetic mineral fibres
Religious Buildings	Asbestos, lead paint, synthetic mineral fibres
Residential housing pre 2003	Asbestos, lead paint, synthetic mineral fibres
Car parts/mechanics	Heavy metals, TPH, BTEX, PAHs, asbestos, VOCs
Car dealerships	Heavy metals, TPH, BTEX, VOCs
Concrete Recyclers	Asbestos, lead paint
Quarry – Backfilling	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Textiles	Heavy metals, BTEX, Phenols, volatile organic compounds (VOCs)

On the basis of the results of this investigation, and subject to the limitations outlined in **Section 7**, it has been identified that there is potential for contamination to be present on individual properties resulting from previous site and offsite activities associated with the identified AECs. Potentially contaminated media present at the Precinct may include fill material, natural soils, soil vapour and groundwater.

Potential hazardous building materials such as asbestos containing materials (ACM) and lead paint may exist within the site buildings including those in areas where redevelopment may occur.

Whilst the preliminary investigation identified the potential for contamination to be present on individual properties in some areas of the Precinct, it did not identify the potential for gross or widespread contamination which may preclude rezoning of the Precinct. Identified potential impacts are considered representative of common contaminants and potentially contaminating land use activities which can be readily dealt with during later development application (DA) stages (i.e. including completion of specific preliminary and detailed site investigations to assess land use suitability consistent with relevant planning instrument) for redevelopment of areas within the Precinct, once detailed development proposals are made.

In the absence of gross or widespread contamination, the requirements of the DUAP/EPA (1998) Managing Land Contamination: Planning Guidelines for rezoning have been satisfied, namely that the rezoning can proceed provided measures are in place to the ensure that the potential for contamination and the suitability of the land for any proposed use are assessed once detailed proposals are made.

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by the NSW Department of Planning and Environment (the client) to provide environmental services to support the planning of the Arncliffe and Banksia Priority Precincts, NSW, located as shown on **Figures 1 and 2.**

The Arncliffe Priority Precinct (herein referred to as the Precinct) is centred on the Arncliffe railway station. Some preliminary planning work has been undertaken between Wolli Creek and Rockdale during development of the Princes Highway Corridor Strategy adopted by Rockdale City Council in September 2013.

The dominant land use within the Precinct comprises low to high-density residential, with some open space recreational areas and other support services such as schools and religious centres. There is however a substantial retail/commercial and light industrial land use corridor along the Princes Highway and suburban railway line. There are a number of large landholdings that have been identified to offer opportunities for rezoning and/or redevelopment as part of the Princes Highway Corridor upgrade strategy.

In preliminary evaluation of information requirements to facilitate rezoning of these areas, it has been identified that there are a number of potential land uses that may have resulted in site contamination. These include open space land in urban areas that can be subject to uncontrolled filling that can incorporate wastes such as asbestos, waste chemicals and storage containers, spoil and general household/commercial rubbish. Additionally, the enterprise corridor along the Princes Highway is known to have properties which have chemical storage such as underground storage tanks (USTs).

Consequently, a preliminary environmental assessment was requested to understand potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs) as may require further consideration as part of the rezoning process.

The scope of the assessment has been developed in general accordance with relevant guidelines made or approved by the NSW Environment Protection Authority (EPA).

1.2 Objectives

The objective of the assessment was to identify and document the potential for contamination within the Precinct, based on a site history review, review of any previous investigations and observations made during inspection of accessible areas within the Precinct.

1.3 Scope of Works

The scope of works completed for this assessment comprised:

- Review of the available documents provided by the client;
- Review and summary of relevant published geological and hydrogeological data including a review of licensed groundwater bore information;
- Review of available Council documentation, aerial photographs, legal title information, WorkCover NSW records, EPA records and Heritage records to identify potential AECs and associated COPCs;
- Inspection of accessible areas of the Precinct to identify potential AECs and COPCs identified in the historical review; and
- Preparation of this ESA report in general accordance with guidelines made or approved by the NSW EPA.

1.4 Opportunity Sites

The Precinct has been identified by NSW Department of Planning and Environment as a Priority Precinct. The aim is to encourage the development of a variety of housing choices within easy access to transport, services and employment.

The key strategic areas within the Precinct are reported to occur predominantly localised around the Arncliffe train station. In these areas opportunities for mixed residential/commercial uses will be considered to promote an active Precinct with vibrant streets and increased density around the train station, as well as the necessary supporting amenity and services which could include new and improved walkways, cycle ways, playgrounds, community facilities and public art.

NSW Department of Planning and Environment has identified a number of typical properties within the Precinct with the potential for some form of redevelopment in the future. These 'opportunity sites', located as shown on **Figure 4**, comprise:

- 28-32 Princes Highway, Arncliffe (Lot 103 DP746547);
- 108 Princes Highway, Arncliffe (Lot 1 DP1199713); and
- 12 Arncliffe St, Wolli Creek/Arncliffe (Lot 3 DP13475).

2. Precinct Condition & Surrounding Environment

2.1 Precinct Identification

The location of the Precinct is shown in **Figure 1**. Land within the Precinct is currently owned by various landowners. The Precinct details, as summarised in **Table 2.1** and shown in **Figure 2**, are described in detail in the following sections.

Table 2.1: Summary Precinct Conditions

Address	Precinct areas surrounding the Princes Highway, Arncliffe, NSW as shown in **Figure 2** attached.
Local Government Authority	Rockdale City Council
Precinct Zoning	R1 General Residential, R2 Low Density Residential, R3 Medium Density Residential, R4 High Density Residential, B4 Mixed use, B6 Enterprise Corridor, IN2 Light Industrial, SP2 Special Uses, RE1 Public Recreation
Current Use	Residential and Commercial/industrial and open space parkland
Proposed Use	Residential and Commercial/industrial and open space parkland
Precinct Area	Approximately 120 Ha
MGA Coordinates (Zone 56) of approximate centre of Precinct	6243350 (S) 328767 (E)

2.2 Site Description

An inspection of the Arncliffe Precinct was undertaken by JBS&G personnel on 31 March 2015.

The Precinct layout is shown in **Figure 2**. The key observations made during the inspection relate to individual sites as shown on **Figure 3**.

The Precinct has many minor roads extending through the Precinct servicing the various residential and commercial properties in the area, however, the main roads are the Princes Highway, Forest Road, Wickham Street, and West Botany Road.

The northern extent of the Precinct boundary comprised Innesdale Street and Bonar Street, with the north eastern boundary being the corner of Innesdale Road and Marsh St. The eastern boundary of the Precinct was along Marsh Street and West Botany Street. The southern boundary of the Precinct was Avenal Street and Marinea Street, with Terry and Dowling Streets for the south western boundary. The western site boundary extended along Hirst and Dension Streets.

Arncliffe train station (Point 8) was located in the central portion of the Precinct, with the Princes Highway alignment located to the east of the station and associated railway line. Adjacent to the train station to the west were located commercial properties, predominantly cafes and shops that serviced the commuters using the train station. Car parking was located on either side of the train station.

The Princes Highway extended through the entire Precinct from north to south, with various commercial properties located all along the Highway. Along the Princes Highway, in the northern extent of the Precinct, where the Princes Highway and West Botany Road converge were located two service stations, one branded as a 7-11 (Point 4) and the other an independent provider (Point 5). The 7-11 service station was located on the northern boundary of the Precinct, with the independent service station located adjacent to the south. Both service stations were observed to contain underground storage tanks (USTs). Based upon observations, potentially four to five USTs, were present on both properties.

To the south of the service station properties, along the Princes Highway, a car parts mechanics property was observed (Point 7). This property was occupied by a residence and a street facing hardstand area with pavements in poor condition. Numerous car and car parts in varying state of decay were apparent on the hardstand.

Along the Princes Highway, at the cross road with Kyle Street (Point 12) a concrete crushing/recycling yard was identified. Additionally, to the south of Kyle Street (Point 13) a steel fabricators property was present.

To the east of Princes Highway corridor, the majority of the developments were identified as residential housing and appeared to be pre 2003 in construction.

Several car dealerships were located along the Princes Highway within the Precinct, including Holden and Hyundai and independent dealerships. Additionally, a taxi firm (Legion Cabs) and Hertz hire car yard were present. The roads to the west of and parallel with the Princes Highway, contain numerous mechanic workshops and second hand car parts yards. Staining on the concrete paved surface was observed throughout these properties.

A vacant block of land was observed to the east of Arncliffe train station in the central portion of the Precinct (Point 1) and was observed to have illegal dumping of household goods present. Access to this property was restricted by metal fencing at the time of the site inspection, however the site was heavily vegetated.

Throughout the Precinct there are various public open spaces and parks, with the largest being Arncliffe Park (Point 6), located in the western portion of the Precinct.

In the southern portion of the Precinct, a portion of Francis Xavier Primary School was present (Point 14). South of the school were residential properties and a vacant lot (Point 11). The vacant lot contained illegal dumping of numerous household goods as well as wood and scrap metal. A vegetated stockpile was present in the central portion of the lot. The southern portion of this vacant lot was being used as a car park. The vegetation on the lot did not appear to be stressed.

One other school was identified within the Precinct (Point 15), located in the southern portion of the Precinct, which was split across two properties and extended over the Princes Highway. School facilities appeared to be in good condition from the limited inspection completed along the adjacent roadways.

New medium to high density residential apartment developments were being constructed throughout the north and north eastern portion of the Precinct.

A selection of photographs of the site is provided in **Appendix A**.

2.3 Surrounding Land Use

Land uses surrounding the Precinct consist of a mixture of residential, commercial/industrial and public open space similar to that observed within the Precinct.

To the north of the Precinct was predominantly commercial and residential properties, with McMahons distribution warehouse present adjacent to the northern boundary. The McMahons premises currently has an environmental protection licence (EPL) for distribution of goods.

Approximately 200 m to the north of the northern Precinct boundary is the airport railway line, with the suburb of Wolli Creek located beyond.

The Kogarah golf course is located to the east of the Precinct, with the Cooks River beyond. Additionally, the M5 motorway tunnel entrance is located to the east of the Precinct, along Marsh Street. The M5 motorway is understood to underlay the Precinct, extending in a north-westerly direction.

Sydney International Airport is located approximately 1.4 km to the east of the Precinct, across the Cooks River.

To the south, south east and west there was generally residential housing developments beyond the Precinct boundaries.

2.4 Topography

A review of the 1:100 000 topographic map for Sydney (9130[1]) identified that the Precinct is located within a rugged, rolling to very steep regional topography characteristic of deeply weathered Hawkesbury sandstone formations. The Precinct varies in ground elevation from less than 10 m to approximately 30 m Australian height datum (AHD). Generally, on a regional basis the topography falls toward the north, north east and north west, with localised areas of modified terrain associated with major infrastructure, including the railway line, the M5 motorway and the Princes Highway.

2.5 Hydrology

There are no permanent surface water bodies/creeks etc within the Precinct. The closest surface water bodies to the Precinct are:

- Cooks River, approximately 0.25 km to the north-east of the Precinct boundary (Marsh St), which flows into Botany Bay;
- Muddy Creek, approximately 1.4 km to the south east of the Precinct boundary (Avenal Street), a man made creek line is present approximately 1.3 km to the south east of the, which extends to Muddy Creek. This manmade creek line was unnamed and is located adjacent to the Eve Street cycleway;
- Wolli Creek approximately 1.4 km to the north of the Precinct boundary (Princes Highway);
- From the western boundary of the Precinct (Hirst Street), Bardwell Creek is located approximately 1.3 km away, which flows into Wolli Creek. Both Wolli Creek and Muddy Creek flow into the Cooks River.

For the roadway, railway, commercial/industrial and residential areas it is anticipated rainfall will generally flow into local and then regional stormwater drainage infrastructure present within the Precinct. Where rainfall falls on the ground surface within these parts of the Precinct, runoff is anticipated to flow into the constructed drains which flow to the Princes Highway and other major roads and then into surface water bodies beyond the Precinct, including the Cooks River, Muddy Creek and Wolli Creek. It is anticipated that rainfall in the vacant, vegetated areas within the Precinct will either infiltrate into the soil or be taken up by the vegetation present. For the remainder of the Precinct, flows are likely to continue overland based on topographical levels.

2.6 Geology

A review of the 1:100 000 Geological Series for Sydney (Geological Survey of NSW Sheet 9130b[2]) indicates the Precinct and surrounds to be underlain by either:

- Middle Triassic Hawkesbury Sandstone of the Wianamatta Group which consist of medium to coarse grained quartz sandstone with very minor shale and laminate lenses in the raised south, west and central portions of the Precinct; or
- Quaternary sediments consisting of silty to peaty sand, silt and clay with common shell layers in lower areas of the Precinct, generally occurring in the north and eastern areas.

A review of the Soil Landscape Map Series (9130c[3]) indicates that the soils at the Precinct may consist of several separate soil landscapes, consistent with the geological conditions as noted above, and are described below:

[1] *Topographic map for Sydney, 1:100 000 Sydney sheet series 9130, 1976 (9130a)*

[2] *Geological Series for Sydney, 1:100 000 Sydney sheet series 9130, 1983 (9130b)*

[3] *Soil landscape map Series, 1:100 000 Sydney sheet series 9130, 1989 (9130c)*

- Hawkesbury: shallow, discontinuous lithosols siliceous sands associated with rock outcrops. Earthy sands, yellow earths, and some yellow podzolic soils on inside of benches and along joints and fractures, localised yellow and red podzolic soils associated with shale lenses, siliceous sands and secondary yellow earths along drainage lines;
- Gymea: shallow to moderately deep yellow earths and earthy sands on crests and inside of benches, shallow siliceous sands on leading edges of benches. Localised gleyed podzolic soils and yellow podzolic soils on shale lenses, shallow to moderately deep siliceous sands and leached sands along drainage lines; and
- Additionally, there is potential for Disturbed Terrain to occur in areas of land reclamation (low lying swamps etc) or those where the original soil has been removed, greatly disturbed or buried, landfill. This material has the potential to include soils, rock, building and waste materials.

2.7 Hydrogeology

Regional groundwater flows are expected towards Botany Bay to the south east of the Precinct, however it is anticipated that flows may be influenced beyond the Precinct boundary by surface water bodies including the Cooks River, Muddy and Wolli Creeks. On a local level it is anticipated that groundwater movement is anticipated to occur in sympathy with the surface topography.

The registered groundwater bore search information was obtained from the Office of Water on the 1 June 2015. A review of the registered bore information indicated that a total of 11 monitoring bores were locations within the boundary of the Precinct. Additionally, a total of two monitoring bores were located within 1 km of the boundary of the Precinct, within the golf course.

The groundwater monitoring well information is provided in **Table 2.2** below and in **Appendix B**:

Table 2.2 Groundwater Bore Summary

Bore	Use	Total Depth (m)	Standing Water Level (SWL)	Water Bearing Horizon
GW023194	General use, domestic	4.80	3.30	Sand
GW024109	Domestic	2.10	2.10	Sand
GW027664	Recreation	6.10	0.7	Unknown
GW107993	Recreation	13.60	1.95	Sand
GW108406	Domestic	8.00	Unknown	Sand
GW109963	Domestic	8.00	Unknown	Sand
GW109964	Domestic	8.00	Unknown	Sand
GW109965	Domestic	8.00	Unknown	Sand
GW109966	Domestic	3.00	Unknown	Clay
GW111693	Domestic	8.85	5.49	Unknown

2.8 Acid Sulfate Soils

Review of the NSW Natural Resource Atlas (NRA 2015[4]) indicated that for the Precinct there are no known occurrences of acid sulfate soil materials within the Precinct. It is however noted that acid sulfate soils occur immediately to the north of the Precinct, beyond Innesdale St, associated with alluvial deposits extending to the Cooks River and are also likely to occur within the golf course to the east of the northern portion of the site. .

[4] *Website www.nratlas.nsw.gov.au accessed on 06 April 2015*

3. Site History

3.1 Aerial Photographs

Aerial photographs were obtained from the Department of Land and Property Information and are included as **Appendix C**. Land use conditions in relation to historical use of the Precinct are discussed below for each image.

1930: The significant Precinct features including the Princes Highway, the railway line and the majority of the street networks had been established. Mixed low density residential and commercial properties surrounded both the railway line and the Highway. The aerial photograph showed that there were the two school developments, in the southern and western portions of the Precinct.

Arncliffe Park was present in the northern portion of the Precinct and appeared to have several paths through it.

In the north eastern portion of the Precinct there appeared to be market gardening.

To the north, north east and east of the Precinct there appeared to be market gardening present. Additionally, to the south, north and west of the Precinct appeared to be residential housing. Beyond the residential housing to the south there appeared to be some earthworks in progress, however the photograph is not clear.

To the north of the Precinct a new train line appeared to be under construction.

1951: The Precinct layout appeared to be similar to the 1930 photograph, with further residential development in the eastern and western portion of the Precinct.

To the east and north of the Precinct there appeared to be significant earthworks taking place.

To the north of the Precinct the additional train line appeared to have been completed.

To the south of the Precinct the excavation appeared to have been completed and Gardiner Park appeared to have been completed.

1961: The Precinct appeared to be similar in layout to the 1951 photograph. Along the Princes Highway further commercial/industrial buildings appeared to have been constructed, with former residential dwellings being demolished.

The market gardens properties in the northern portion of the Precinct appeared to have been redeveloped for commercial uses. An oval previously adjacent to the market gardens had also been built on.

The extent of market gardening land uses previously located to the east of the Precinct appeared to have reduced, with earthworks present.

1970: The Precinct appeared to be similar in layout to the 1961 photograph, with further residential development apparent in the eastern and western portion of the Precinct.

1982: The Precinct appeared to be similar in layout to the 1970 photograph. The M5 was under construction to the east of the Precinct.

1991: The Precinct appeared to be similar in layout to the 1982 photograph.

1998: The Precinct appeared to be similar in layout to the 1991 photograph.

2005: The Precinct appeared to be similar in layout to the 2005 photograph.

3.2 Title Deeds

A title search was completed by Mark Groll on behalf of JBS&G for three properties identified as being opportunity sites within the Precinct. Copies of the title deeds are provided in **Appendix D**.

For the historical titles obtained for the three properties, a summary is presented in **Table 3.1** following.

Table 3.1 Summary of Historical Title Deeds

Address	Lot	Map Reference	Year	Title
32 Princes Highway Arncliffe	Lot 103 D.P. 746547	Part 1	1916 to 1920	Mary Bond (Married Woman)
			1920 to 1923	War Service Homes Commissioner
			1923 to 1926	Bernica Eileen McDougall (Married Woman)
			1926 to 1942	Arthur William Jenkinson (Petty Officer)
			1942 to 1948	Frederick Alan Johnson (Printer) Dorothea Inez Johnson (Married Woman)
			1948 to 1949	Stanley James Young (Milk Carter)
			1949 to 1956	Jack Findon (Taxi Proprietor)
			1956 to 1957	Rufus Benjamin Gawler (Pensioner) Sarah Mary Gawler (Married Woman)
			1957 to 1958	Martinus Van Laarhoven (Painter)
			1958 to 1979	B.P. Australia Limited
			1979 to 1987	Evan Donald Cameron (Electrical Contractor) Edna Ellen Cameron (Married Woman)
			1987 to date	Behemi Pty Limited
		Part 2	1907 to 1921	Marion McIlwraith (Spinster) (Now Marion Cuthbertson, Married Woman) Hannah McIlwraith (Spinster) (Now Hannah Jane Petherbrige, Married Woman)
			1921 to 1946	Marion Cuthbertson (Married Woman)
			1946 to 1957	Lillian Allan (Married Woman)
			1957 to 1979	Commonwealth Oil Refineries Limited Now B.P. Australia Limited
			1979 to 1987	Evan Donald Cameron (Electrical Contractor) Edna Ellen Cameron (Married Woman)
			1987 to date	Behemi Pty Limited
		Part 3	1913 to 1922	Annie Reid (Widow)
			1922 to 1923	Alexander Couchrian Reid (Grazier) (Transmission Application not investigated)
			1923 to 1947	Matilda Colley (Spinster)
			1947 to 1949	Robert Ernest Turtle (Estate Agent)
			1949 to 1954	Elsie Linda Burcher (Widow)
			1954 to 1955	Mary Josephine Dwyer (Spinster)
			1955 to 1957	Arthur Marron (Omnibus Proprietor)
			1957 to 1957	Joseph Wilkinson (Labourer) John Frederick Beesley (Truck Driver)
			1957 to 1979	Commonwealth Oil Refineries Limited Now B.P. Australia Limited
			1979 to 1987	Evan Donald Cameron (Electrical Contractor) Edna Ellen Cameron (Married Woman)
			1987 to date	Behemi Pty Limited
Land title records indicate the property located at 32 Princes Highway was possibly used as a residential property from at least 1913 until 1957 when BP purchased the site for use as a service station. In 1979 BP sold the site to the current owner who used the site as a service station to the present.				
108 Princes Highway, Arncliffe	Lot 1 D.P. 1199713	Part 1	1920 to 1924	Henry Lewry Soper (Builder)
			1924 to 1925	Lenar Lily Christensen (Spinster)
			1925 to 1945	Bridget Lyons (Married Woman)

Address	Lot	Map Reference	Year	Title
			1945 to 1960	Alice McCarron (Married Woman)
			1960 to 1960	Joseph James Cruice (Storeman) Mary Eileen Cruice (Married Woman
			1960 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 2	1920 to 1924	Henry Lewry Soper (Builder)
			1924 to 1925	Lenar Lily Christensen (Spinster)
			1925 to 1945	Bridget Lyons (Married Woman)
			1945 to 1954	Alice McCarron (Married Woman)
			1954 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 3	1920 to 1924	Henry Lewry Soper (Builder)
			1924 to 1925	Lenar Lily Christensen (Spinster)
			1925 to 1945	Bridget Lyons (Married Woman)
			1945 to 1952	Alice McCarron (Married Woman)
			1952 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 4	1921 to 1922	John Harold Dooley (Manufacturer)
			1922 to 1933	Sophie Bartlett Cornell (Married Woman)
			1933 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 5	1919 to 1924	Frederick Thomas Brooks (Produce Merchant)
			1924 to 1925	Hanibal Archie Roberts (Carpenter)
			1925 to 1928	Richard Facer (Manufacturer)
			1928 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 6	1919 to 1931	Frederick Thomas Brooks (Produce Merchant)
			1931 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 7	1919 to 1935	Frederick Thomas Brooks (Produce Merchant)
			1935 to 1939	Sarah Ann Brooks (Widow) Thomas Alton Entwistle (Railway Clerk)
			1939 to 1939	Thomas Alton Entwistle (Railway Clerk)
			1939 to 1945	Frederick Roy Brooks (Produce and Fuel Merchant) William Clive Brooks (Produce and Fuel Merchant)
			1945 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited

Address	Lot	Map Reference	Year	Title
		Part 8	1919 to 1935	Frederick Thomas Brooks (Produce Merchant)
			1935 to 1935	Sarah Ann Brooks (Widow) Thomas Alton Entwistle (Railway Clerk)
			1935 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 9	1919 to 1933	Frederick Thomas Brooks (Produce Merchant)
			1933 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 10	1920 to 1928	Richard Facer (Gentleman)
			1928 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 11	1919 to 1934	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1934 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 12	1919 to 1936	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1936 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 13	1919 to 1936	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1936 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 14	1919 to 1940	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1940 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 15	1919 to 1943	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1943 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited

Address	Lot	Map Reference	Year	Title
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Part 16	1919 to 1946	Council of the Municipality of Rockdale (Vested in Council as a quarry to obtain road making material)
			1946 to 1988	Efco Mfg. Co. Pty Limited Now Efco Property Pty Limited
			1988 to 1994	S.I. Properties Limited
			1994 to 2015	Brano Pty Limited
		Whole	2015 to date	Combined Projects (Arncliffe) Pty Limited
A portion of the site was used as a quarry by the Council from approximately 1919 to 1945. The majority of this property has been owned by a manufacturing company for the period from approximately the late 1930s to late 1980s when the property was transferred to property holding companies with a number of ongoing leases.				
12 Arncliffe Street, Wolli Creek (Arncliffe)	Lot 3 D.P. 13475	-	1919 to 1925	Edwin Godfrey (Brick Manufacturer)
			1925 to 1926	William Charles Hadley Lippmann (Retired Bank Manager) Arthur Stanley Colwell (Licensed Surveyor) Henry Mascord (Abattoirs Inspector) Cyril Albert Freckelton (Clerk)
			1926 to 1928	William Charles Hadley Lippmann (Retired Bank Manager) Arthur Stanley Colwell Licensed Surveyor) Cyril Albert Freckelton (Clerk)
			1928 to 1951	William Spencer Bridge (Retired Gardener)
			1951 to 1952	Colin McPherson (Company Director) Dorothy McPherson (Married Woman)
			1952 to 1955	Spencer William Bridge (Retired Gardener)
			1955 to 1987	W.C. Stevens Pty Limited
			1987 to 1996	Textile Industries (Aust.) Pty Limited Now Textile Industries Australia Limited
			1996 to 1997	C S Brooks Canada Inc
			1997 to 2001	Classic Motoring Properties Pty Limited
			2001 to 2009	Roving Star Pty Limited
			2009 to date	Taleb Property Pty Ltd
The records indicate that the site may have initially been used for residential purposes, following which there may have been a period for market garden use during the 1930s and 1950s following which the site had been developed for commercial/industrial use associated with textile and vehicle/automotive industries.				

3.3 EPA Records

A search of the NSW EPA's public register maintained under the Protection of the Environment Operations Act 1997 was undertaken for the Precinct. The results of the search are presented in **Appendix E**. The search identified that there were no current or former prevention, clean-up or prohibition notices for properties located within the Precinct and immediate surrounds.

A search of the EPA's public register for current and historical EPL records issued under the POEO Act identified one licence and is summarised below:

- Licence holder: Morris, McMahons & Co Pty Ltd
- Premises: 34 Arncliffe Street, Arncliffe
- Activity: Goods Distribution

It should be noted that this licence is for a property located off-site along the northern boundary of the Precinct.

A search was also undertaken through the EPA public contaminated land register. The search identified that there have been no notices issued for properties within the Precinct under the Contaminated Land Management Act 1997 or for any nearby surrounding properties.

A search of the NSW EPA register of notified sites identified the 7-11 service station premises located at 28 Princes Highway as being notified to the EPA. The property and associated available contaminated land assessment information is currently undergoing assessment by the EPA with respect to potential listing as a significantly contaminated site.

3.4 Heritage Records

A search of the Australian Heritage Trust database and the NSW Heritage Inventory was undertaken and the resulting records are included in **Appendix F**. The search indicated that the Precinct has 80 items of heritage significance. The majority of these heritage items are related to historical residential properties. The Rockdale Development Control Plan (2011[5]) provides information on the development requirements for any heritage items listed but does not indicate whether specific heritage conservation areas occur associated with these properties and surrounds.

3.5 Council Records

A total of three s.149 certificates from Rockdale City Council were ordered for three properties representative of the Opportunity sites. At the time of writing two of the three certificates had been received.

The certificates are included in **Appendix G**. The following information is noted in the certificates for the relevant properties:

- The following zoning is noted on the 149 certificates;
    - IN2 Light Industrial; and
    - B6 Enterprise Corridor.
- The land is not located in a heritage conservation area;
- The land is not affected by any road widening or road realignment under Roads Act 1993;
- The land is not affected by any of the matters contained in Clause 59(2) as amended in the Contaminated Land Management Act 1997 as listed:
    - That the land to which the certificate relates is not significantly contaminated land;
    - That the land to which the certificate relates is not subject to a management order;
    - That the land to which the certificate relates is not the subject of an approved voluntary management proposal;
    - That the land to which the certificate relates is not subject to an ongoing maintenance order;
    - That the land to which the certificate relates is not the subject of a site audit statement;
- The land is not subject to a Tree Preservation Order; and
- The land is not identified as being affected by implementation of the Coastal Protection Act 1979 or proclaimed to be within a mine subsidence district within the meaning of Section 15 of the Mine Subsidence Compensation Act 1961.

[5] *Rockdale Development Control Plan, Rockdale City Council, 2011 (2011)*

3.6 WorkCover Dangerous Goods Database

WorkCover Dangerous Goods licence database searches were not undertaken as part of this assessment as specific written permission to undertake the search is required from the landowner and this was not available at the time of preparation of this report.

3.7 Previous Investigations

No previous environmental investigations were provided by the client to JBS&G for review during this preliminary assessment.

3.8 Integrity Assessment

The information obtained from formal published sources noted above has been found to be in general agreement regarding the history of the site.

Although the dangerous goods, titles and council searches were not completed for all properties within the site, the information gathered during the site inspection and the historical search were generally in agreement as to the location of former infrastructure and AECs.

Based on the range of sources and the general consistency of the historical information, it is considered that the historical assessment has an acceptable level of accuracy with respect to the potentially contaminating activities historically occurring at the site.

4. Conceptual Site Model

The information presented herein, together with the report figures, provides a conceptual site model (CSM) for the site based on the current understanding of the site and the specific project objectives.

4.1 Potential Areas of Environmental Concern

Based on the site history review, the Precinct inspections, and in consideration of the specific project objectives, potential AECs and associated COPCs for various portions of the Precinct have been identified and are presented in **Table 4.1.**

Table 4.1 General Areas of Environmental Concern and Associated Contaminants of Potential Concern

Area of Environmental Concern	Contaminants of Potential Concern
Fill material used to obtain existing ground levels	Heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos
Vacant blocks (illegal dumping/filling)	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Former Market Gardens	OCPs, organophosphate pesticides (OPPs), heavy metals
Service Stations and underground petroleum storage on industrial/commercial properties	Heavy metals, TPH, BTEX, PAHs
Railway	Heavy metals, TPH, BTEX, PAHs
Steel Fabricators/manufacturing operations	Heavy metals, TPH, BTEX, volatile organic compounds (VOCs), cyanide
Former Site Building Structures	Asbestos, lead paint, synthetic mineral fibres
Schools	Asbestos, lead paint, synthetic mineral fibres
Religious Buildings	Asbestos, lead paint, synthetic mineral fibres
Residential housing pre 2003	Asbestos, lead paint, synthetic mineral fibres
Car parts/mechanics	Heavy metals, TPH, BTEX, PAHs, asbestos, VOCs
Car dealerships	Heavy metals, TPH, BTEX, VOCs
Concrete Recyclers	Asbestos, lead paint
Quarry – Backfilling	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Textiles	Heavy metals, BTEX, Phenols, volatile organic compounds (VOCs)

Based on the historical review the potential AECs and COPCs within the opportunity sites are provided below in **Table 4.2**.

Table 4.2 Opportunity Sites

Opportunity Site	AEC	COPCs
As per **Figure 4**	Former Market Gardens	OCPs, OPPs, heavy metals
	Service Stations and underground petroleum storage on industrial/commercial properties	Heavy metals, TPH, BTEX, PAHs
	Car parts/mechanics	Heavy metals, TPH, BTEX, PAHs, asbestos, VOCs
	Residential housing pre 2003	Asbestos, lead paint, synthetic mineral fibres
	Steel fabricators/manufacturing	Heavy metals, TPH, BTEX, volatile organic compounds (VOCs), cyanide
	Concrete Recyclers	Asbestos, lead paint

Sensitive receptors within portions of the Precinct as may be redeveloped are considered to include: site workers and visitors who may come into contact with potentially contaminated media within the specific sites, especially during the future redevelopment activities, as per **Section 4.5.**

4.2 Potentially Contaminated Media

Potentially contaminated media targeted for this investigation:

- Fill material;
- Natural soils;
- Surface water; and
- Groundwater.

Some potential for filling has been identified in various areas of the Precinct, including the possibility of historical burial of waste material and potential demolition waste and potentially a former quarry within the Precinct, since reinstated. Given the absence of specific records in relation to the source of fill material used and the age of fill material in various areas of the Precinct, fill material is considered to comprise a potentially contaminated medium.

Current and historical site activities, including industrial land uses, automotive operations, market gardens, etc, have been identified as having the potential to have resulted in impacts to surface and near-surface soils. Additionally, petroleum storage has occurred within a range of individual premises within the Precinct such that natural soils in various areas within the Precinct are considered to comprise potentially contaminated soils.

Where fill is exposed at the ground surface there is the potential for impacted materials on the ground surface to have impacted natural soil through potential leaching or direct impacts from historical site activities.

The potential leachability of identified contaminants of concern and subsurface contamination sources (e.g. underground petroleum storage systems (UPSS), fill) contribute to groundwater being nominated as a potentially contaminated medium. As with the natural soils, the potential for contamination of groundwater will depend upon the actual nature, occurrence and characteristics of contamination within overlying fill material (where present) and/or potentially natural soils.

Given the close proximity of surface water bodies to the site and that rainfall would flow into these surface water bodies through overland flow, surface waters in some areas of the Precinct are also considered to be a potentially contaminated media.

4.3 Potential for Migration

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants identified at the site are present in solid (e.g. impacted soil or fill, asbestos), liquid (e.g. dissolved in water) and gaseous (eg. Soil vapour) forms.

Rainfall infiltration at the site is expected to occur in unsealed areas. There is therefore the potential for contaminants in fill to leach into underlying natural soils and into shallow/perched groundwater.

As the site is covered primarily with vegetation or hard stand (bitumen/concrete/buildings), the potential for windblown dust migration of contamination from the site is generally low other than in localised areas where unsealed surfaces exist.

The potential for generation of vapours or ground gases associated with volatile contaminants will be limited to localised areas where such contaminant sources occur (e.g. UPSS sites, former quarry, etc).

4.4 Potential Exposure Pathways

Based on the contaminants of potential concern identified in various media as discussed above, existing land uses identified within the Precinct and with consideration of future potential site development activities, the exposure pathways considered to be potentially complete for various areas of the Precinct include:

- Potential dermal and oral contact to impacted soils (and associated dust) during future maintenance/development works within various areas of the Precinct;
- Potential oral and dermal contact to shallow groundwater, where present, during maintenance and/or development works in areas of the Precinct where excavations may be required for new or existing underground services, basements, etc;
- Potential contaminant uptake by vegetation established in the various vegetated areas of the Precinct, potentially including large street tree plantings and landscaped areas;
- Potential contaminant uptake by site occupants as a result of ingestion via eating edible plant (including fruit and vegetable) matter grown in areas of the Precinct;
- Direct ingestion of soil, particularly by young children playing on the ground surface in non-paved areas of the Precinct; and/or
- Inhalation of contaminant vapours migrating upward to the ground surface and/or accumulating within existing/future service excavations, basements, etc or above ground structures as may occur in areas where volatile contaminants maybe present.

4.5 Receptors

Potential receptors of environmental impact as may occur within areas of the Precinct include:

- Future site occupants whom may potentially be exposed to COPCs through direct contact with impacted soils and/or inhalation of dusts / fibres / vapours associated with impacted soils; and/or
- Excavation / construction / maintenance workers conducting activities at or in the vicinity of various properties within the Precinct, whom may potentially be exposed to COPCs through direct contact with impacted soils and/or groundwater present within excavations and/or inhalation of dusts / fibres / vapours associated with impacted soils;
- Flora species established in the vegetated areas of the Precinct inclusive of large trees and edible plants; and/or
- The aquatic ecosystem of various localised creek lines located hydro-geologically down-gradient of the Precinct.

4.6 Preferential Pathways

For the purpose of this preliminary investigation, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPCs as either liquids or gases.

Man-made preferential pathways are present in limited areas of the Precinct, generally associated with historical and/or current underground services infrastructure and in areas of fill material. Fill materials are anticipated to have a higher permeability than the underlying natural soil and/or bedrock.

Where sub-surface infrastructure easements occur within the Precinct, preferential pathways can be formed by the generally higher permeability backfill used to re-instate these trenches.

Preferential pathways are also important in the assessment of potential off-site sources of COPCs. Preferential pathways are potentially present in the adjoining road network, as associated with service easements.

5. Discussion

Based on the review of historical land uses within the Precinct and the representative Opportunity Sites a number of potential contamination issues have been identified. These issues are common to many urban areas currently undergoing renewal.

There exists the potential for impacts associated with the use and storage of petroleum hydrocarbons throughout the Precinct. This is mainly associated with underground storage at commercial/industrial properties including services station, vehicle repair, vehicle sale yards etc.

Although the historical aerial photographs did not appear to show a quarry present within the Precinct, the title deeds suggested that one of the opportunity sites was selected for use as a quarry for road making materials. Excavation and subsequent placement of materials as may have occurred to reinstate such an excavation would likely have resulted in uncontrolled filling within this property given the time at which the works would have occurred. This along with the potential for more widely spread uncontrolled filling activities across the Precinct to establish current ground levels has potential to have resulted in impacts in the Precinct.

There are existing buildings that may contain hazardous materials based on their age, including residential properties built before 2003 in the opportunity sites footprint.

Several vacant properties were identified within the Precinct which may have had illegal dumping of anthropogenic materials, including household rubbish.

The review identified historical market gardening in the northern and eastern portions of the Precinct which may have used herbicides, pesticides, heavy metals and ACM including drainage pipes, fencing, small sheds, etc.

Despite the potential for contamination from historical land uses as discussed, there is no indication of the potential for gross or widespread contamination that would preclude rezoning, and the associated potential impacts are common and readily able to be assessed and if required managed when future redevelopment is planned. Potential contamination from historical land use in areas of recent or current redevelopment are assumed to have been addressed through the planning approvals process.

Identified potential impacts are considered representative of common contaminants and contaminating land use activities which can be readily addressed during later development approval (DA) stages. This would include completion of more specific preliminary and detailed site investigations consistent with relevant planning instruments including and SEPP 55 requirements, for redevelopment of areas within the site once detailed development proposals are made.

6. Conclusions and Recommendations

Based on the desktop review and discussion above and the limitations in **Section 7**, the following findings have been reached.

- There is the potential for contamination to be present in areas of the Precinct where rezoning and redevelopment may occur, typically associated with underground petroleum infrastructure, the presence of fill material, historical use for market gardens, metal fabrication, automotive sales and repair activities and hazardous building materials;
- In areas where there has been relatively new development, or development is currently occurring, it is assumed that requirements for assessment and management of potential contamination have already been captured during the planning process;
- Potential contamination issues identified are considered unlikely to have resulted to be gross or of significant widespread occurrence such that they would preclude rezoning; and
- Offsite activities at some locations (e.g. where service station sites are present within or in proximity to the Precinct boundaries) could have the potential to result in contamination migrating beyond the extents of individual properties within the Precinct through soil, groundwater and/or soil vapour migration.

Whilst the preliminary investigation identified the potential for contamination to be present in some areas of the Precinct, the investigation did not identify the potential for gross or widespread contamination which may preclude rezoning of properties within the Precinct, including the identified opportunity sites. Identified potential impacts are considered representative of common contaminants and potentially contaminating land use activities which can be readily dealt with during the DA stage (i.e. including completion of specific preliminary and detailed site investigations to assess land use suitability consistent with relevant planning instruments, including SEPP 55, requirements) for redevelopment of areas within the Precinct, once later detailed development proposals are made.

In the absence of gross or widespread contamination, the requirements of the DUAP/EPA (1998) Managing Land Contamination: Planning Guidelines for rezoning are considered to have been satisfied, namely that the rezoning can proceed, "*provided that measures are in place to the ensure that the potential for contamination and the suitability of the land for any proposed use are assessed once detailed proposals are made*" (s.4.1.2 DUAP 1998).

It is recommended that individual properties within the Precinct proposed to be developed be suitably investigated in accordance with relevant NSW EPA endorsed guidelines to assess site-suitability, when detailed development proposals are made.

It is also recommended that Hazardous Building Material Surveys (HBMS) be undertaken prior to any demolition and redevelopment works on individual land parcels where redevelopment is proposed.

7. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

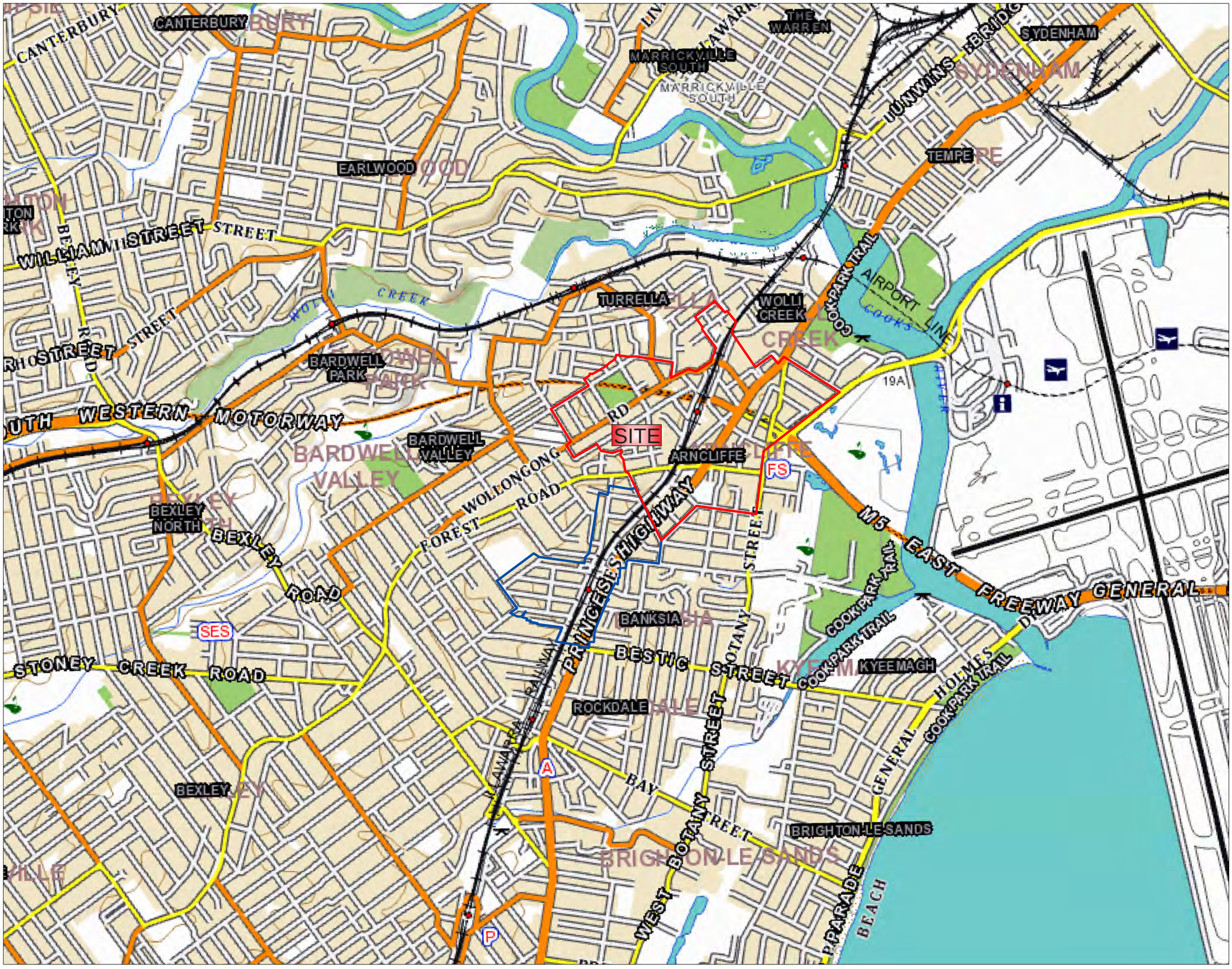
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of 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 contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures



Legend:

- Approximate Site Area - Arncliffe
- Approximate Site Area - Banksia

JBS&G

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Client: APP Corporation	
Version: R01 Rev B	Date: 13-Aug-2015
Drawn By: SE	Checked By: JR

Scale 1:20,000

0 800
metres

Coord. Sys. GDA 1994 MGA Zone 56

Arncliffe Precinct

SITE LOCATION

FIGURE 1

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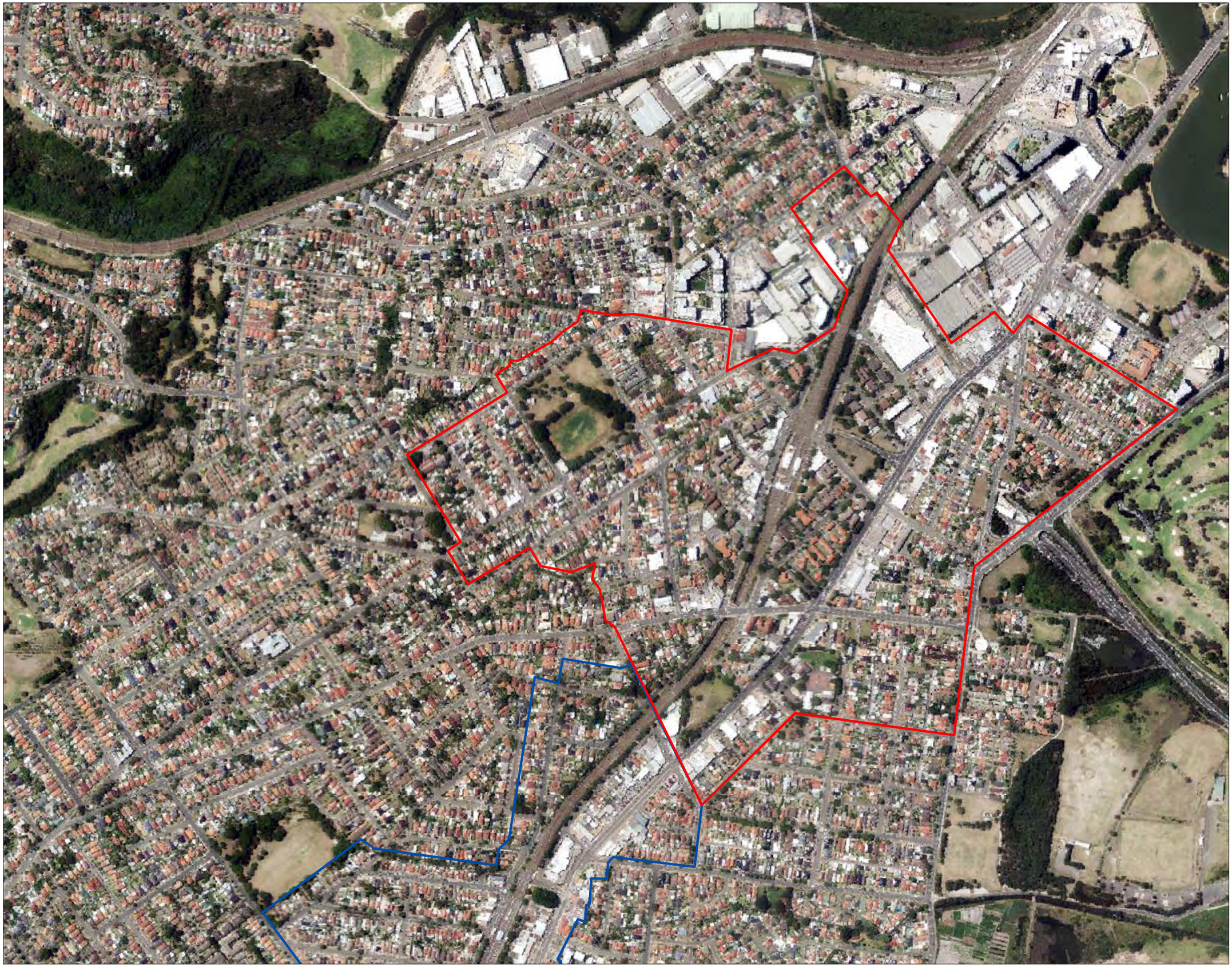

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Approximate Site Area - Arncliffe
Approximate Site Area - Banksia

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Job No: 50299

Client: APP Corporation

Version: R01 Rev B	Date: 13-Aug-2015
Drawn By: SE	Checked By: JR

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0 200
metres

Coord. Sys. GDA 1994 MGA Zone 56

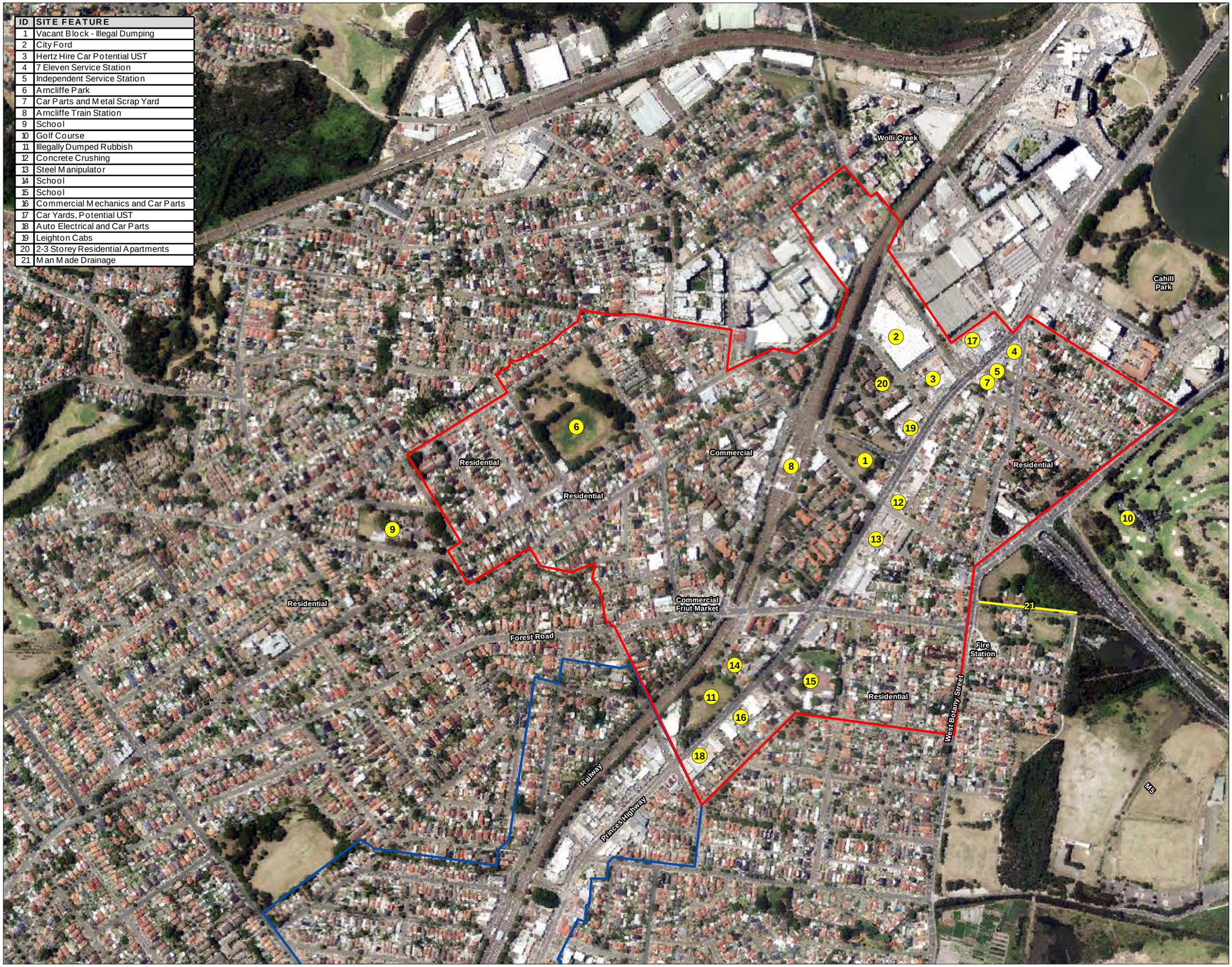
Arncliffe Precinct

SITE LAYOUT

FIGURE 2

Document Path: G:\JBS Environmental\Projects\APP Corporation\50299 Arncliffe and Banksia Precincts\06 GIS\Maps\Arncliffe\R01-RevB\50299_02.mxd
Reference:

ID	SITE FEATURE
1	Vacant Block - Illegal Dumping
2	City Ford
3	Hertz Hire Car Potential UST
4	7 Eleven Service Station
5	Independent Service Station
6	Arncliffe Park
7	Car Parts and Metal Scrap Yard
8	Arncliffe Train Station
9	School
10	Golf Course
11	Illegally Dumped Rubbish
12	Concrete Crushing
13	Steel Manipulator
14	School
15	School
16	Commercial Mechanics and Car Parts
17	Car Yards, Potential UST
18	Auto Electrical and Car Parts
19	Leighton Cabs
20	2-3 Storey Residential Apartments
21	Man Made Drainage



Legend:

- Approximate Site Area - Arncliffe
- Approximate Site Area - Banksia

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Job No: 50299

Client: APP Corporation

Version: R01 Rev B | Date: 13-Aug-2015

Drawn By: SE | Checked By: TH

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Coord. Sys. GDA 1994 MGA Zone 56

Arncliffe Precinct

SITE FEATURES

FIGURE 3

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Reference:

Legend:

- Approximate Site Area - Arncliffe
- Approximate Site Area - Banksia
- Approximtae Opportunity Sites

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Version: R01 Rev B	Date: 21-Aug-2015
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metres

Coord. Sys. GDA 1994 MGA Zone 56

Arncliffe Precinct

OPPORTUNITY SITES

FIGURE 4

Document Path: G:\JBS Environmental\Projects\APP Corporation\50299 Arncliffe and Banksia Precincts\06 GIS\Maps\Arncliffe\R01-RevB\50299_04.mxd
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