

Appendix L

Contamination Review

Kellyville Station Precinct



Planning &
Environment



Aver Pty Ltd
Phase 1 Environmental Site Assessment

North West Rail Priority Precinct
Kellyville Precinct

19 August 2015
50033/60179 (Rev 1)
JBS&G

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List of Abbreviations

ACM	Asbestos Containing Material
AEC	Areas of environmental concern
AHD	Australian Height Datum
BTEX	benzene, toluene, ethylbenzene, xylenes
COC	Chain of Custody
COPC	Contaminant of potential concern
CSM	Conceptual site model
BTEX	Benzene, toluene, ethylbenzene and xylenes
B(a)P	Benzo(a)pyrene
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
NWRL	North West Rail Link
OEH	Office of Environment and Heritage
OCP	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
SEPP	State Environmental Planning Policy
TPH	Total Petroleum Hydrocarbons

Additional Terms:

Full name	Abbreviated name and acronyms
Kellyville Station Precinct	the Precinct
Kellyville Station Precinct Structure Plan	the Structure Plan
The Department of Planning and Environment	the Department
The Hills Shire Council	the Council (only where there will be no confusion about which council referred to)
Blacktown City Council	the Council (only where there will be no confusion about which council referred to)
The Hills Local Government Area	The Hills LGA
North West Rail Link	NWRL
North West Rail Link Corridor Strategy	NWRL Corridor Strategy
The Hills Local Environmental Plan 2012	The Hills LEP 2012
The Hills Development Control Plan 2012	The Hills DCP 2012

Executive Summary

This report has been prepared by JBS&G Australia Pty Ltd and provides an assessment of Kellyville Precinct (the Precinct) relating to the proposed rezoning of the Showground Station Precinct.

The Kellyville Station Precinct was announced by the NSW Government in August 2014. The precinct is one of number of Priority Precincts which aim to provide for more homes, jobs and improved public spaces close to transport and services. One of the key goals for Priority Precincts is to increase housing choice and affordability by delivering increased housing supply in an environmentally, socially and economically sustainable manner.

The Kellyville Station Precinct is located in The Hills Shire Local Government Area (The Hills LGA) and covers approximately 436 hectares.

The vision for the Kellyville Station Precinct is for a vibrant, mixed use centre comprising a mixture of offices, shops, community facilities, recreational, cultural and leisure activities, education, and a mix of housing types within walking distance of the new station.

The Kellyville Station Precinct is a long term project that will be delivered over the next 25 years.

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 site comprised an approximate 436 ha area. The site has many minor roads extending through it servicing the various residential and commercial properties in the area, however, the main roads are Old Windsor Road, Windsor Road, Samantha Riley Drive, Sanctuary Drive and Memorial Avenue.

The site contained various site users including, various open space parklands area, residential and agricultural.

The site historical review suggested the site has historically been used for agricultural purposes and potentially a brick works.

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 fill former dams, creek lines and low lying areas	Heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos
Illegally dumped material	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Former market gardens, agricultural areas.	OCPs, metals
Former and existing Site Building Structures, particularly on former/existing agricultural land	Asbestos, lead paint, synthetic mineral fibres
Landscaping Supplies Site, including stockpiles, illegal dumping, hazardous building materials.	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos, lead paints, SMF
Substation	OCPs, PCBs, asbestos
Service Station Sites (off-site)	TPH, BTEX, PAH, metals

On the basis of the results of this investigation, and subject to the limitations outlined in **Section 7**, there is potential for contamination to be present resulting from previous site and offsite activities associated with the identified AECs. Potentially contaminated media present at the site may include fill material, natural soils 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 in some areas of the site, it did not identify the potential for gross or widespread contamination which may preclude rezoning of the site. 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 site, 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 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

This report has been prepared by JBS&G Australia Pty Ltd and provides an assessment of Kellyville Precinct (the Precinct) relating to the proposed rezoning of the Showground Station Precinct.

The Kellyville Station Precinct was announced by the NSW Government in August 2014. The precinct is one of number of Priority Precincts which aim to provide for more homes, jobs and improved public spaces close to transport and services. One of the key goals for Priority Precincts is to increase housing choice and affordability by delivering increased housing supply in an environmentally, socially and economically sustainable manner.

The Kellyville Station Precinct is located in The Hills Shire Local Government Area (The Hills LGA) and covers approximately 436 hectares.

The vision for the Kellyville Station Precinct is for a vibrant, mixed use centre comprising a mixture of offices, shops, community facilities, recreational, cultural and leisure activities, education, and a mix of housing types within walking distance of the new station.

The Kellyville Station Precinct is a long term project that will be delivered over the next 25 years.

1.1 Background

JBS&G was engaged by Aver Pty Ltd (the client) to prepare a Phase 1 Environmental Site Assessment (ESA), as shown on **Figure 1**.

The Precinct is situated in the North-West Growth Centre and is part of the overall North West Rail Link (NWRL) Corridor development (NWRL Corridor Strategy), as shown in **Figure 2**. The site has been identified as a major new residential and commercial Precinct with large tracts of current semi-rural residential land becoming a mixture of low to high density residential, commercial/industrial and open space land as part of the development.

The site encompasses areas that are restricted in terms of growth and development of the area due to current building projects or recent residential and other development. However, key areas have been identified, as shown in **Appendix A**, and have been designated as 'Opportunity Sites'. These sites are discussed further in **Section 2.9**.

These include proposed residential developments and open space areas in the north of the site, and a mixed use high density and commercial development, associated with the rail network in central portion of the site. Kellyville train station is to be development in the central portion of the site.

It is understood that in these existing large rural and semi-rural parcels there is potential for environmental impacts associated with historical activities such pesticide use, demolition of hazardous building materials and fuel/chemical storage, along with potential for landfilling and illegal dumping of waste materials. Consequently, a preliminary environmental assessment is required to understand potential areas of environmental concern (AECs).

This assessment assumed that existing developed areas have been through appropriate planning approvals and processes including investigation and management of potential contamination, and as such the main focus of review and assessment was on areas where a change in land use will occur (e.g. rezoning/development of former agricultural/rural land) and in the areas identified as opportunity sites.

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, based on 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 contaminants of potential concern (COPCs);
- Inspection of accessible areas 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.

2. Site Condition & Surrounding Environment

2.1 Site Identification

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

Table 2.1: Table Caption

Address (centre of Precinct)	Samantha Riley Drive, Kellyville, NSW
Local Government Authority	The Hills Shire Council
Site Zoning	R1 General Residential, R2 Low Density Residential, R3 Medium Density Residential, R4 High Density Residential, B2 Local Centre, B6 Enterprise Corridor, B7 Business Park, SP2 Special Uses, RE1 Public Recreation, RE2 Private Recreation, W1 Natural Waterways
Current Use	Residential and Commercial/industrial and open space parkland
Proposed Use	Residential and Commercial/industrial and open space parkland
Site Area	Approximately 436 Ha
MGA Coordinates (Zone 56) of approximate centre of Precinct	6268176 (S) 309231 (E)

2.2 Site Description

An inspection of the future Precinct was undertaken by JBS&G on 16 November 2014.

The site comprised an approximate 436 ha area and the site layout is shown in **Figure 2**. A selection of Photographs of the site is provided in **Appendix B**.

The site has many minor roads extending through it servicing the various residential and commercial properties in the area, however, the main roads are Old Windsor Road, Windsor Road, Samantha Riley Drive, Sanctuary Drive and Memorial Avenue. Throughout the future Precinct there are various public open spaces and parks.

The northern extent of the site boundary was Sanctuary Drive, with Windsor Road and Sanctuary Drive the eastern boundary extent. The southern boundary of the site was the Memorial Avenue. The western sites boundary extended along Stanhope Parkway, Salford Street and Perfection Avenue.

To the west of Old Windsor Road, the majority of the site was identified as residential housing and appeared to be pre 2003 in construction. A man made drainage channel extended from the western boundary of the site to Old Windsor Road and extended to the south with it being partially vegetated. Opposite this area was a T-Way car park that was still under construction.

Observed vegetation in the drainage channel did not appear to be stressed and fauna, such as ducks, were observed using the waterway. Full inspection of the drainage channel was not completed but evidence of minor fly tipping of household rubbish was observed adjacent to the bridge over the channel along Sunnyholt Road.

Stanhope Gardens was located in the south western portion of the site. The park contains various sporting fields including tennis courts, softball pitch and football fields. Along Sunnyholt Road to the east of Stanhope Gardens, a Telstra Substation was present.

Adjacent to Old Windsor Road, within the opportunity site area A, the site was large acre residential blocks and agricultural plots present.

Small retail complexes within site were present on Windsor Rd in north, which included a pet store and café. Another small retail complex, Kellyville shopping centre was present in the south eastern portion of the site.

In the northern portion of the site, a nature reserve was present. The reserve had woodland vegetation along various small watercourses, including Caddies and Strangers Creeks, and large open grassed areas. There was evidence of isolated instances of illegal dumping of household waste in the nature reserve, including fridges and electronic goods, additionally tyres were also observed in one location.

Within the opportunity site B, a landscape suppliers was observed and contained various stockpiles of soil that ranged in size. Evidence of illegal dumping was observed, with fill mixed with concrete observed. Additionally, the former shop for this property appeared to be in poor condition and potentially contained hazardous materials.

A new residential development was present in the north portion of the site, south of the nature reserve, with single to three storey homes present. A new residential development was also present to the south of Windsor Road and south of Samantha Riley Drive.

New residential housing (post 2003) was being constructed in the southern portion of the site along Arnold Avenue. Additional areas adjacent Arnold Avenue appear to be being readied for residential redevelopment from large scale rural residential lots. Within this area there were several properties with pre 2003 houses, which appeared dilapidated and potentially contained hazardous materials.

2.3 Surrounding Land use

The site consists of a mixture of residential, commercial/industrial, public open space, agricultural land and scrub bushland.

A Caltex service station was located at 1190 Old Windsor Road, to the north west of the site, near to Merriville Road. A Caltex service station was located at 3-5 Windsor Road, to the south east of the site, near President Road. A BP service station was located at 19-21 Windsor Road, to the south east of the site, near President Road.

To the south, south east, west and north west there is residential housing surrounding the site.

2.4 Topography

A review of the 1:100 000 topographic map for Penrith (9030¹) identified that the site is located within a hilly, moderate slopes with varied falls regional topography. The future Precinct varies from 40-70 AHD.

2.5 Hydrology

The closest surface water bodies to the site, are Elizabeth Macarthur Creek, Caddies Creek and Strangers Creek which all run south to north through the site. Elizabeth Macarthur Creek is located approximately 400 m to the east of Old Windsor Road. Strangers Creek is located within an area of bushland along the eastern boundary of the site. Caddies Creek is located in the western portion of the site.

There are various onsite dams associated with the site's former use for agricultural purposes.

It is anticipated that rainfall in the vacant, vegetated areas within the site will either infiltrate into the soil or be taken up by the vegetation present.

For the residential areas it is anticipated rainfall will flow into stormwater drainage infrastructure present. Where rainfall falls on this part of the site, runoff is anticipated to flow into the constructed drains which flow to Old Windsor Road etc. For the remainder of the site, flows are

1

likely to continue overland based on topographical levels and flow into the natural creeks and altered creeks lines, especially in the northern portion of the site.

2.6 Geology

A review of the 1:100 000 Geological Series for Penrith (Geological Survey of NSW Sheet 9030²) indicates the site and surrounds are underlain by Quaternary fluvial sediments consisting of fine grained sand, silt and clay and by Triassic Ashfield Shales of the Wianamatta Group which consist of Dark grey to black claystone-siltstone and fine sandstone-siltstone laminite.

A review of the Soil landscape map Series (9030³) indicates that the soils at the site are hallow to moderately deep (<100 cm) hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.

2.7 Hydrogeology

Registered groundwater bore information obtained from the National Resource Atlas database on the 20th November 2014. A review of the registered bore information indicated that a total of 2 monitoring bores were located within the boundary of the Precinct. Additionally, a further 31 monitoring bores were located within 1 km of the boundary of the site. The majority of the offsite bores were located within the Golf Course to the south of the Precinct and to the east within a substation property.

However, no information for any of the bores was available at the time of the preparation of this report.

On a regional level it is anticipated that groundwater movement is anticipated to occur in sympathy with the surface topography.

Regional groundwater flows are expected towards the Creeks to the north-west of the site

A map of the locations of the known groundwater bores is provided in **Appendix C**.

2.8 Acid Sulfate Soils

Review of the NSW Natural Resource Atlas (NRA 2014⁴), indicated that for the site, there is none known occurrence of acid sulfate soils within the site.

2.9 Opportunity Sites

As discussed in **Section 1.1**, the development of the NWRL has identified key sites that have been designated as 'opportunity sites' that could be developed for residential, commercial and open space uses. The current potential opportunity sites are listed in **Table 2.2** below, as reflected in **Appendix A**.

² Department of Mineral Resources (1983). Sydney Geological Series Sheet 9030

³ Department of Land and Water Conservation (1983). Sydney Soils Landscape Series Sheet 9030

⁴ New South Wales Natural Resource Atlas, <http://www.nratlas.nsw.gov.au/>. Accessed 20 November 2014. (NRA 2014).

Table 2.2 Opportunity Sites

Opportunity Site	Current Zoning	Future Zoning/Land Use
A	Infrastructure and Business Park, Low density residential, open space	Mixed Use, including Local Centre, infrastructure, open space and high-density residential
B	Infrastructure and Enterprise Corridor, open space	Open space, community and infrastructure
C	Medium Density Residential and Infrastructure	High Density Residential and Infrastructure
D	General and Low density residential	Medium and High Density Residential, open space

3. Site History

3.1 Aerial Photographs

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

1947: This aerial photograph was of low resolution and did not encompass the entire site, northern and eastern sections were excluded due to availability of expansive photographs. The site appeared to be predominantly undeveloped. Old Windsor Road and Windsor Road segregate the site into northern, central and western segments.

Along the north side of Windsor Road lighter patches indicated development from greenfield conditions had occurred in the form of vegetation clearance and construction of minor buildings.

The central and western portions of the site were sparsely vegetated. Trees generally followed the bank of Elizabeth Macarthur Creek, Caddies Creek and straight lines indicating anthropogenic interference in the form of clearance and/or planting. Lighter lines and areas indicated some preliminary roads and minor building construction.

More significant development appeared to surround the site, particularly in the northeast and southeast portions of the photograph. Development appeared to be primarily in the form of agricultural land clearance and/or crop growing.

1955: This aerial photograph did not encompass the entire site, northern and eastern sections were excluded due to availability of expansive photographs. The site appeared to remain predominantly undeveloped. Some further construction of Old Windsor Road and Windsor Road had occurred. Additional agricultural development occurred south of site on the southeast corner of the photograph.

1961: This aerial photograph did not encompass the entire site, some eastern, western and southern sections were excluded due to availability of expansive photographs. The site appeared to remain predominantly undeveloped. Some further construction along Windsor Road had occurred. Additional agricultural development occurred to the north of the site.

The northern section of site was visible in this aerial photograph, revealing an area of cleared vegetation and some minor building developments. Due to the size of the buildings they are assumed to be small residential structures and sheds.

1982: This aerial photograph did not encompass the entire site, an eastern section was excluded due to availability of expansive photographs.

North of Windsor Road new structures are visible in the form of two dams and some associated infrastructure. Further development of agricultural land was evident in the form of new structures. West of Old Windsor Road a dark patch was evident, assumed to be a dam.

Agricultural utilisation of the central portion of the site increased significantly and covered 70% of land between Old Windsor Road and Windsor Road. Further development of roads within this section are evident and construction of buildings is clear within the agricultural development.

This aerial photograph revealed that the surrounding land use was also primarily agricultural. The majority of the land was cleared of natural vegetation and evidence of fields/farms was apparent.

1991: The site appeared to remain predominantly unchanged since the 1982 photograph. Some minor changes in vegetative patterns were evident.

This aerial photograph revealed that the surrounding land use to the east of the site was primarily residential.

1998: The northern and central portions of the site exhibited no significant developments. Some residential properties were constructed in the central portion of site along the south side of Windsor Road. A circular structure was evident in the southwest corner of site assumed to be the Stanhope Reserve as evident on site at the time of this report. Additionally development occurred south of the Stanhope Reserve in the form of residential housing and preliminary road construction.

North of site, on the northeast corner of the photograph, extensive areas of cleared vegetation are visible, indicating future redevelopment. Some of the infrastructure associated with the dam had been replaced with preliminary residential development.

2004: Vast redevelopment within and surrounding the site occurred. Surrounding land use was primarily residential to the northeast, east, and west of the site. Cleared vegetation and small road developments to the west of site and along the western border of site indicated residential development was still occurring at the time of this aerial photograph.

The central portion of the site, south of Windsor Road underwent significant redevelopment in the form of construction of residential housing and further road infrastructure. Within the site boundary, areas of agricultural land use did not undergo significant change since the 1998 photograph.

Northeast of site underwent expansive residential redevelopment and south, east and north of the northern tip of site remained primarily unchanged.

2014: Development of some sections along the northern edge of Windsor Road, within the eastern and western sections of the site were evident in the form of residential housing construction. To the north and south of the site, residential housing was constructed and some further development along the western boundary of site is evident.

3.2 Title Deeds

A title search was completed for five properties from within the Precinct. The title search was completed by Mark Groll. The title deeds are provided in **Appendix E**.

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

Table 3.1 Summary of Historical Tittle Deeds

Address	Lot	Year	Title	Opportunity Site
113 Windsor Road	Lot 2 DP 1067179	1900 to 1920	Margaret Ann Rumery (Married Woman)	N/A
		1920 to 1925	Elihu Stranger (Orchardist)	
		1925 to 1928	David McCormick (Land Owner)	
		1928 to 1944	George Arthur Beeby (Fish Dealer)	
		1944 to 1946	Christopher Wager (Road - House Keeper)	
		1946 to 1950	Stanley Edward Victor Macauley (Picnic Ground Proprietor)	
		1950 to 1951	Edward Irving Ingram (Business Proprietor) Marjorie Elizabeth Dorothy Ingram (Married Woman)	
		1951to1953	Lilian J\ifay Power (Married Woman)	
		1953 to 1954	Robert Heffron (Store Keeper) Laura Heffron (Married Woman)	
		1954to1957	Gerald Vincent Hughes (Retired) Mavis Evelyn Hughes (Married Woman)	
		1957 to 1975	Leslie Robert Smith (Ironworker)	
		1975 to 1976	James Leslie Smith (Postal Clerk) Nancy Murdoch (Married Woman) (Section 93 Application not investigated)	
		1976 to 1978	Anthony Iaria (Landscape Gardener) Vincent Vumbaca (Landscape Gardener) Helen Margaret Vumbaca (Married Woman)	
		1978to1981	Vincent Vumbaca (Invalid Pensioner) Helen Margaret Vumbaca (Married Woman)	
1981 to 1988	George Leonard Kneeves (Company Director) Marcia Beryl Kneeves (Married Woman)			
1988 to 2013	Full Hope (Aust.) Pty Limited			
115 Windsor Road	Lot 7 DP 1031575	1900 to 1920	Margaret Ann Rumery (Married Woman)	N/A
		1920 to 1925	Elihu Stranger (Orchardist)	
		1925 to 1932	David MacCormick (Land Owner)	
		1932 to 1960	Olive May Williams (Spinster)	
		1960 to 1971	Carl Williams (Wood Machinist) (Section 94 Application not Investigated)	
		1971 to 1971	Henry Nolan (Cabinet Maker)	
		1971 to 1987	Storbet Pty Limited	
		1987 to 2008	# Minister Administering the Environmental Planning Assessment Act 1979	
31 Memorial Avenue	Lot 17 DP 215650	1921 to 1923	William Thomas Louis Archdall Pearce (Clerk in Holy Orders)	N/A
		1923 to 1923	James Burns (Gentleman) George Dyson (Agent) Francis Gartrell (Master Baker)	
		1923 to 1928	Edward Albert Ware (Baker)	
		1928 to 1935	Arbanoo Country Golf Club Limited	
		1935 to 1937	Australian Provincial Assurance Association Limited	
		1937 to 1940	Valentine Cecil Woodberry (Dairy Farmer) Violet Exlizabeth Woodberry (Married Woman)	
		1940 to 1959	J.Reeves Pty Limited	
		1959 to 1965	Trustees of the Society of the Divine Word	
		1965 to 1975	Dudley Ralph Hearn (Company Director)	

Address	Lot	Year	Title	Opportunity Site
		1975 to 1996	Espeditu Buttigieg (Builder) Antonietta Buttigieg (Married Woman) Abramo Zattere (Builder) Mary Paula Zattere (Married Woman)	
		1996 to 1996	Espeditu Buttigieg (Builder) Antonietta Buttigieg (Married Woman) Mary Paula Zattere (Widow)	
		1996 to 2012	Mary Paula Zattere (Widow)	
		2012 to date	# Mary Paula Zattere (Widow) # Judy Anne Feeney	
50 Stanhope Gardens	Lot 1002 DP 844925	1858 to 1928	William Thomas Pearce (Farmer)	N/A
		1928 to 1948	John Forth Peel (Dairyman)	
		1948 to 1968	John Forth Peel, Junior (Dairyman)	
		1968 to 1974	Timothy John Peel (Assistant Farm Manager)	
		1974 to 2000	Housing Commission of New South Wales	
		2000 to date	# Blacktown City Council	
686 Sunnyholt Road	Lot 14 DP 844963	1858 to 1928	William Thomas Pearce (Farmer)	N/A
		1928 to 1948	John Forth Peel (Dairyman)	
		1948 to 1968	John Forth Peel, Junior (Dairyman)	
		1968 to 1989	Timothy John Peel (Assistant Farm Manager)	
		1989 to date	# Prospect County Council Now # Endeavour Energy	

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 subject site and surrounding properties. The results of the search are presented in **Appendix F**. The search identified that there were no current or former prevention, clean-up or prohibition notices for the site and immediate surrounds.

A search of the EPA's public register for current and historical environmental protection licence (EPL) records issued under the POEO Act identified no holders. However, Sydney Water Corporation have an EPL for the sewage treatment works located approximately 1 km to the north east of the site.

A search was also undertaken through the EPA public contaminated land register and relevant records are included in **Appendix F**. The search identified that there have been no notices issued for the site under the Contaminated Land Management Act 1997 or any nearby surrounding properties.

A search of the NSW EPA register of notified sites identified the Caltex and BP service stations along the eastern side of Windsor Road to the southeast have been notified to the EPA. Both properties are currently undergoing assessment

3.4 Heritage Records

A search of the Australian Heritage Trust database and the NSW Heritage Inventory was undertaken. The search indicated that the site has no heritage items present.

It is noted that part of Old Windsor Road is heritage listed but not within the current site boundaries.

It is understood that a heritage assessment is currently being prepared by others.

3.5 Council Records

A total of five s.149 certificates were ordered for five different properties, two from Blacktown City Council (BCC) and three from The Hills with the s.149 planning certificates 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;
 - B6 Enterprise Corridor – Lot 2 DP 1067179, Lot 7 DP 1031571;
 - SP2 Infrastructure – Lot 2 DP 1067179;
 - 5(a) – Special Uses – Lot 14 DP 844963;
 - R2 Low Density Residential – Lot 17 DP 215650;
 - 6(a) – Open Space, public recreation – Lot 1002 DP 844149
- The following properties are in vicinity of a heritage item as described in The Hills Local environmental Plan 2012: Lot 2 DP 1067179, Lot 7 DP 1031575,
- The rest of 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 significantly contaminated land;
- That the land to which the certificate relates is subject to a management order;
- That the land to which the certificate relates is the subject of an approved voluntary management proposal;
- That the land to which the certificate relates is subject to an ongoing maintenance order;
- That the land to which the certificate relates is the subject of a site audit statement;
- The land at Lot 14 DP 844963 is affected by a tree preservation control under Blacktown Local Environmental Plan 1988: A person shall not ringbark, cut down, lop, top, remove, injure or wilfully destroy any tree or cause any tree to be ringbarked, cut down, topped, lopped, injured or wilfully destroyed, except with the consent of the council.
- The remaining 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;
- The land is not subject to flood related development controls but further investigation is required to determine flood risk. - Lot 17 DP 215650, Lot 2 DP 1067179, Lot 7 DP 1031571, Lot 1002 DP 844149, and Lot 14 DP 844963.

3.6 WorkCover Dangerous Goods Database

Of the various properties that make up the site, five were selected, based on the site history review, to have a Dangerous Goods Licence search of the Stored Chemical Information Database maintained by WorkCover NSW completed.

The properties that were included in the search are below:

- A Stockpile area identified as Lot 7 DP 1031575;
- The Former Orchard identified as Lot 17 DP 215650;
- The Former Timber Yard identified as Lot 1 DP 1067179;
- The Compound and Storage Yard identified as Lot 1 DP 1066762; and
- A Potential Agricultural Site identified as Lot 1 DP 1087785.

At the time of writing this report, the Dangerous Goods Licences had not be received.

3.7 DA/BA Records

Development Application and Building Application records were not obtained from the council for this report.

3.8 Previous Investigations

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

3.9 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 site inspections, and in consideration of the specific project objectives, potential AECs and associated COPCs 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 fill former dams, creek lines and low lying areas	Heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos
Illegally dumped material	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
Former market gardens, agricultural areas.	OCPs, metals
Former and existing Site Building Structures, particularly on former/existing agricultural land	Asbestos, lead paint, synthetic mineral fibres
Landscaping Supplies Site, including stockpiles, illegal dumping, hazardous building materials.	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos, lead paints, SMF
Substation	OCPs, PCBs, asbestos
Service Station Sites (off-site)	TPH, BTEX, PAH, metals

Specific AECs and COPCs that are potentially present on the opportunity sites are identified in **Table 4.2** below

Table 4.2 Opportunity Sites

Opportunity Site	Future Zoning	Area of Environmental Concern	Contaminants of Potential Concern
A	Mixed Use, including Local Centre, infrastructure, open space and high-density residential	Agricultural, former dams, creeks – demolition waste	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
B	Open space, community and infrastructure	Agricultural, Landscape suppliers stockpile yard	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
C	High Density Residential and Infrastructure	Agricultural, former dams, creeks – demolition waste	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos
D	Medium and High Density Residential, open space	Agricultural (no market gardens), former dams, creeks	Heavy metals, TPH, BTEX, PAHs, OCPs, PCBs and asbestos

Sensitive receptors at the site are considered to include: site workers and visitors who may come into contact with potentially contaminated media within the site, especially during the site redevelopment, 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 reported at the site, including possible historical burial of waste material and potential demolition waste. Additionally, petroleum storage has occurred adjacent to the site. Based on this the fill material is considered a potentially contaminated medium.

Surface and near surface natural soils at the site are considered to comprise potentially contaminated media. 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, the surface water in some areas is 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) and liquid (e.g. dissolved in water) 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).

Additionally, there is potential for offsite migration of impacts onto the site, such as from the service station properties located to the south east of the site that are under EPA investigation.

4.4 Potential Exposure Pathways

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

- Potential dermal and oral contact to impacted soils (and associated dust) during future service/other excavations across areas of the Site;
- Potential oral and dermal contact to shallow groundwater, where present during potential future service excavations and/or installed services pits or other excavations in areas of the site;
- Potential contaminant uptake by vegetation established in the various vegetated areas of the site, 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 site;
- Direct ingestion of soil, particularly by young children playing on the ground surface in non-paved areas of the site; and/or
- Inhalation of contaminant vapours migrating upward to the ground surface and/or accumulating within future service excavations and/or installed service pits or structures in areas where volatile contaminants maybe present.

4.5 Receptors

Potential receptors of environmental impact within the site 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 the site, 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 site inclusive of large trees and edible plants; and/or
- The aquatic ecosystem of various localised creek lines located hydro-geologically downgradient of the site.

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 site, generally associated with historical and/or current underground services infrastructure and in areas of fill material at the site. Fill materials are anticipated to have a higher permeability than the underlying natural soil and/or bedrock.

Where sub-surface infrastructure easements occur at the site, 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

Potential contamination risks are predominantly associated with former historical uses of the site for agricultural purposes including market gardens, filling and demolition of former structures containing hazardous building materials. All the opportunity sites appeared to have at some stage been used for agricultural purposes.

There also exists the potential for former creeks and dams to have been filled with uncontrolled waste, including asbestos. Creeks and dams were present in a number of opportunity sites.

There are existing buildings that may contain hazardous materials based on their age, including residential properties, and the office within the landscaped supplies site. Additionally, within agricultural properties, especially along Arnold Avenue in the southeast where market gardens existed, dilapidated sheds were present that potentially contained hazardous materials.

The is potential contaminant migration from offsite sources, specifically two services stations adjacent to Windsor Road to the south east of the site. Both sites are under investigation for potential impacts.

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 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 historical agricultural use of land and filling;
- 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;
- The historical removal of multiple residential and commercial buildings located at the site could pose a contamination risk to the site resulting from demolition of structures potentially including hazardous building materials (e.g. asbestos and lead-paint);
- There is the potential for hazardous building materials such as asbestos and lead paint to be present in structures on the site in areas where demolition may be required to facilitate later redevelopment; and
- Offsite activities at some locations (e.g. where service station sites exist in proximity to the site boundaries) could have the potential to result in contamination migrating onto the site through soil or groundwater.

Whilst the preliminary investigation identified the potential for contamination to be present in some areas of the site, the investigation did not identify the potential for gross or widespread contamination which may preclude rezoning of the site. 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 instrument, including SEPP 55, requirements) for redevelopment of areas within the site, 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 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 properties to be developed as part of the NWRL development 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.

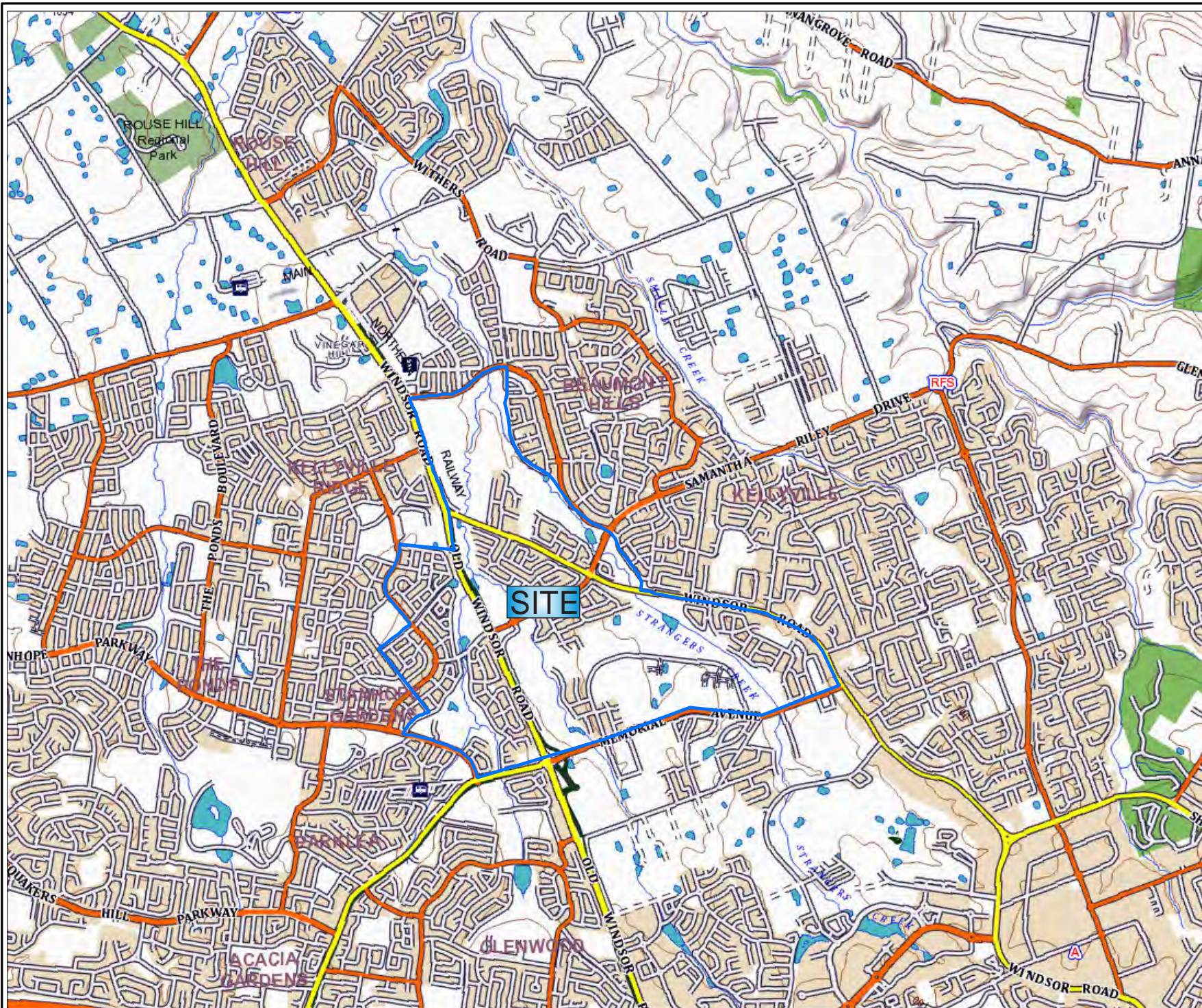
Investigation of potential contamination is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the investigation considered appropriate based on the regulatory requirements.

No sampling or laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Potential contaminants and areas of concern are based on the information detailed in the site history. Further potential contaminants or areas of concern may exist at the site, which were not identified in the site history and which may not reasonably be expected at the site.


Changes to site 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 Boundary



Job No: 50033

Client: AVER

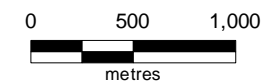
Version: R01 Rev A

Date: 04-Nov-2014

Drawn By: SE

Checked By: TH

Scale 1:37,000



Coor. Sys. GDA 1994 MGA Zone 56


**North West Rail Link
Kellyville, NSW**

SITE LOCATION

FIGURE 1:



Legend:

 Approximate Site Boundary



Job No: 50033

Client: AVER

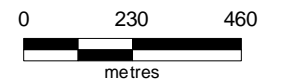
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Date: 26-Nov-2014

Drawn By: SE

Checked By: TH

Scale 1:16,000






Coord. Sys. GDA 1994 MGA Zone 56

**North West Rail Link
Kellyville, NSW**

SITE LAYOUT

FIGURE 2:



- Legend:**
-  Approximate Site Boundary
 -  Nature Reserve
 -  Residential Development



Job No: 50033

Client: AVER

Version: R01 Rev A

Date: 01-Dec-2014

Drawn By: SE

Checked By: TH

Scale 1:16,000



Coor. Sys. GDA 1994 MGA Zone 56

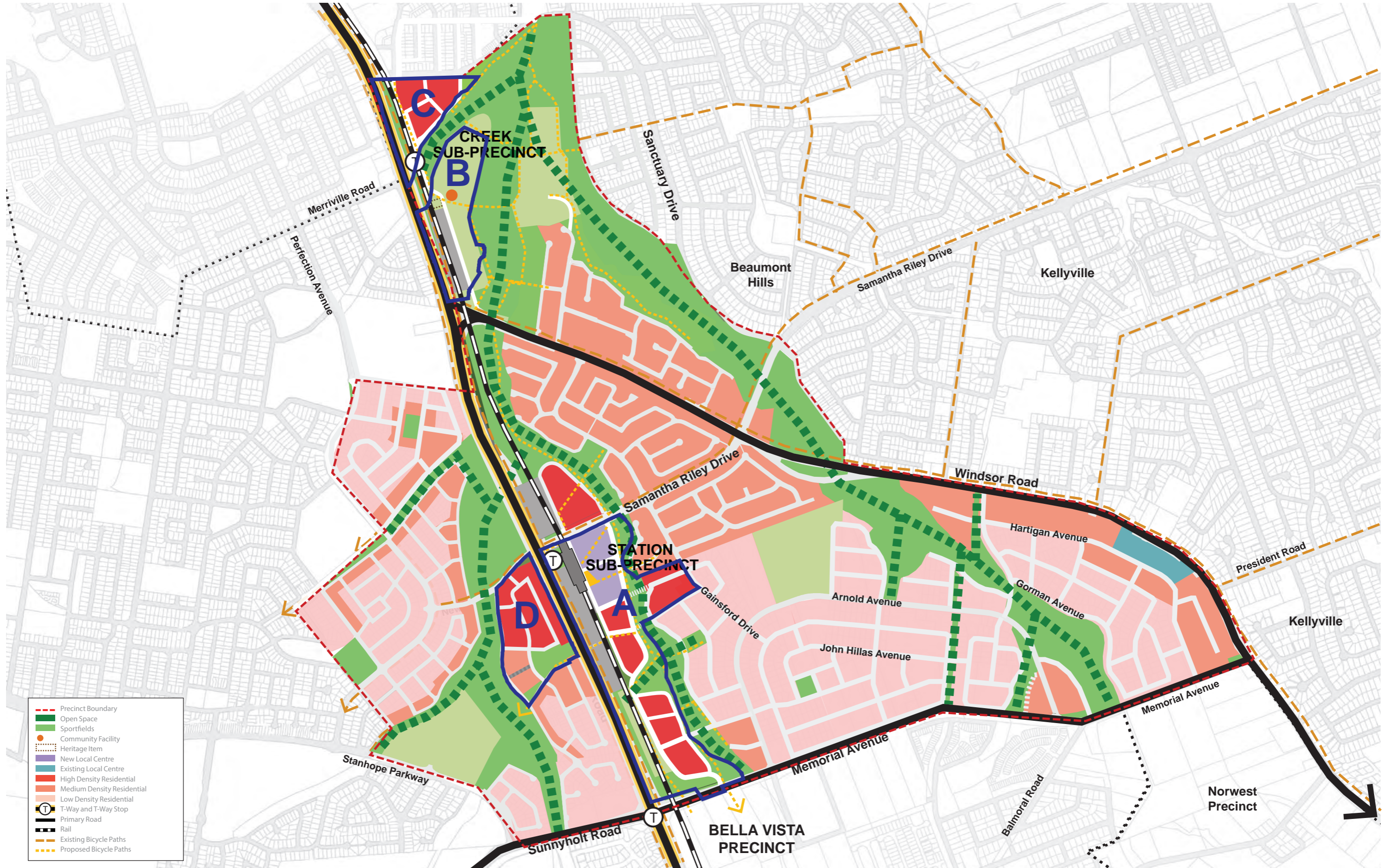
**North West Rail Link
Kellyville, NSW**

SITE FEATURES

FIGURE 3:

Appendix A: Opportunity Sites

Kellyville



Appendix B: Photographic Log

**POTENTIAL HAZARDOUS MATERIALS IN SHEDS ALONG
ARNOLD AVENUE**



ILLEGAL DUMPING IN RESERVE



ILLEGAL DUMPING IN RESERVE



OPEN PARKLAND IN RESERVE



Job No: 50033

Client: Aver

Version: A

Date: 25/11/2014

Drawn By: TH

Checked By: MB

Not to Scale

Coord. Sys n/a

**Kellyville Precinct
North West Rail Link**

POTENTIAL HAZARDOUS MATERIALS BUILDING AT THE LANDSCAPE SUPPLIERS YARD



STOCKPILE AREA IN OPPORTUNITY SITE B



ILLEGAL DUMPING IN RESERVE ALONG WINDSOR ROAD



STOCKPILE AREA IN OPPORTUNITY SITE B



Job No: 50033

Client: Aver

Version: A

Date: 25/11/2014

Drawn By: TH

Checked By: MB

Not to Scale

Coord. Sys n/a

**Kellyville Precinct
North West Rail Link**

LANDSCAPE SUPPLIERS AREA IN OPPORTUNITY SITE B



SUBSTATION



STANHOPE GARDENS SOFTBALL FIELD



STANHOPE GARDENS TENNIS COURTS



Job No: 50033

Client: Aver

Version: A

Date: 25/11/2014

Drawn By: TH

Checked By: MB

Not to Scale

Coord. Sys n/a

**Kellyville Precinct
North West Rail Link**

Appendix C: Hydrogeology

