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VicUrban

Phase 1 Environmental Site Assessment
Werribee Employment Precinct
Werribee VIC

22 March 2009
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Document Distribution and Control

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1	22 March 2009	Margaret Mazur Principal Environmental Hydrogeologist

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1 Introduction

Compass Environmental was engaged by VicUrban to conduct a Phase 1 Environmental Site Assessment at the proposed Werribee Employment Precinct, Werribee VIC (the "site"). The site comprises a 755-hectare parcel of land, and is currently occupied by a variety of land uses, including open farmland and commercial premises, associated with government and commercial agricultural and animal research. The site comprises the former State Research Farm, excluding 170 hectares of freehold land.

The assessment is being conducted for due diligence purposes as part of consideration of possible development options for the site, and to provide a framework for further environmental testing. A range of proposed land uses are being considered for the site, including residential (low to high density), commercial and industrial. The site location is shown in figure 1.

The objectives of the assessment were as follows:

- ❒ To collate and review readily available site history and relevant background information in relation to the site.
- ❒ To identify potential contaminants and/or potential environmental issues at the site associated with the current and former uses of the land.

1.1 Zones

For the purpose of the assessment, the site has been divided into eight zones. The zones and main operations/users within each zone are outlined in table 1 below. Figure 1 shows the layout of the adopted zones.

Table 1 Site Zones and Users

Zone	Area of Site	Approximate Area (hectares)	Main Operations/Users
A	West: area bound by Sneydes Road, Princes Highway and North Road.	30	DPI - Old Farm buildings and Student residences (both vacant).
B	West: area bound by Sneydes Road, South Road and Wattle Avenue (in part).	55	DPI - Food Sciences Australia and Soil Sample Library DPI - Gilbert Chandler Building and portables (vacant) Vegetable Growers Association Pivot Eureka
C	North: area bound by Princes Highway and Hoppers Lane.	30	University of Melbourne Veterinary Science Clinical Centre
D	Central: area bound by Sneydes Road, North Road and Hoppers Lane.	95	DPI - New Farm Compound DPI - 600 Sneydes Rd offices DPI - Pig Research and Training Centre Animal Reproductive Technical Services
E	South: area bound by Sneydes Road, Princes Freeway and Wattle Avenue.	120	DPI - EH&C State Chemistry Laboratory DPI - KRC Library Prince Henry's/Monash CSIRO Meat Research Training Centre/

Zone	Area of Site	Approximate Area (hectares)	Main Operations/Users
F	North: area bound by Hoppers Lane, Princes Highway and Princes Freeway. This area is in two separate parts.	30	DPI
G	East: area bound by Sneydes Road, Princes Freeway and Hacketts Road.	150	DPI
H	South: area bound by Sneydes Road, Princes Freeway, Hacketts Road and Harrisons Road.	245	DPI

2 Scope of Work

The Phase 1 Environmental Site Assessment was carried out in accordance with the general requirements of Australian Standard Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds (AS4482.1-2005) and the National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999).

The following scope of work was implemented:

Site history review

- ❒ Review of historical aerial photographs.
- ❒ Enquiry to local historical society.
- ❒ Review of early State Research Farm building report (Sands 2001).
- ❒ Review of EPA Priority Sites Register.
- ❒ Discussion with local Council regarding the history of the area (including the location of former/current council waste transfer/disposal tips).
- ❒ Search for available trade waste records.
- ❒ Review of available property sewerage plans.
- ❒ Interviews with site personnel.
- ❒ Review of available DPI historic plans.

Appraisal of regional and local geology and hydrogeology

- ❒ Appraisal of geology and hydrogeology including a review of available geological, hydrogeological and topographical maps.

Site inspection

- ❒ Detailed site inspection to determine current site condition and to check for any visual evidence of potential contamination.
- ❒ Inspection of apparent condition and use of adjacent properties.

Reporting

- ❒ Preparation of report, including detailed appraisal of potential for site contamination and recommendations for further assessment.

3 Site Characterisation

3.1 Site Setting

The site comprises an area of 755 hectares. The remaining 170 hectares of the former State Research Farm is a freehold land and is not subject to this investigation. The site is bound by Princes Highway to the north, Hacketts Road to the east and Harrisons Road and Wattle Avenue (in part) to the south and west. The Princes Freeway crosses the site in a north-south direction. Sneydes Road crosses the site in an east-west direction and was formerly known as the East and West Road.

The site is predominantly open farmland, managed by DPI. An area of the site surrounding the intersection of North/South Road and Sneydes Road (in an approximate radius of 500m) comprises numerous buildings associated with both Government and Commercial research enterprises.

The site comprises a number of parcels of land, as outlined in tables 2 to 11.

Table 2 600 Sneydes Road

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 2015	2015\PP2518	A
Allot. 2017	2017\PP2518	B and E
Allot. 2023	2023\PP2518	H
Allot. 1A Sec. C	1A~C\PP2518	A, C and D
Allot. 1P Sec. C	1P~C\PP2518	E
Allot. 1T Sec. C	1T~C\PP2518	B
Allot. 1W Sec. C	1W~C\PP2518	E
Allot. 2A Sec. C	2A~C\PP2518	G
Allot. 3 Sec. C	3~C\PP2518	H
Allot. 3A Sec. C	3A~C\PP2518	H
PARISH OF DEUTGAM Allot. 22 Sec. E	22~E\PP2518	H
Allot. 23 Sec. E	23~E\PP2518	H
Allot. 30 Sec. E	30~E\PP2518	H
Allot. 47 Sec. E	47~E\PP2518	H
Allot. 48 Sec. E	48~E\PP2518	H
Allot. 49 Sec. E	49~E\PP2518	H
Allot. 50 Sec. E	50~E\PP2518	H
PARISH OF TARNEIT Allot. 11D Sec. B	11D~B\PP3552	G

Table 3 200 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 3B Sec. C	3B~\CPP2518	H

Table 4 240 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 1 Sec. C	1~C\PP2518	F
Allot. 1G Sec. C	1G~C\PP2518	F

Table 5 246 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 9C Sec. B	9C~B\PP2518	F

Table 6 South Road

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 2003	2003\PP2518	B

Table 7 671 Sneydes Road

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot. 1S Sec. C	1S~C\PP2518	B

Table 8 Lot 2019 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot 2019	2019\PP2518	H

Table 9 Lot 2020 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot 2020	2020\PP2518	H

Table 10 Lot 2024 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot 2024	2024\PP2518	H

Table 11 Lot 2025 Hoppers Lane

Lot/Plan or Crown Description	SPI	Zone
PARISH OF DEUTGAM Allot 2025	2025\PP2518	H

3.2 Surrounding Land Use

The site is located on the south side of the Princes Highway, Werribee VIC. The use of the land in the vicinity of the site (as of 25 February 2009) is described in the table below.

Table 12 Surrounding Land Use

Direction	Land use
North	Residential across Princes Highway. A service station is located on the corner of Princes Highway and Derrimut Road, approximately 50 m from the northern boundary of the site. The Melbourne – Geelong railway line is located further to the north. South of the Princes Highway is the Werribee Police Station, the Victoria University of Technology, the Hoppers Crossing Pumping Station, a community radio telecommunications tower, the Werribee Mercy Hospital and the Agrifoods Technology Centre.
South	Market gardens.
East	Residential within the Point Cook residential development precinct.
West	Residential directly to the west of the site in the northern end and residential across Wattle Avenue at the southern end.

3.3 Council Planning Scheme

At the time of this assessment, the following zones and planning overlays applied to the site under the Wyndham City Council Planning Scheme. Landata Property and Planning reports are included in appendix B.

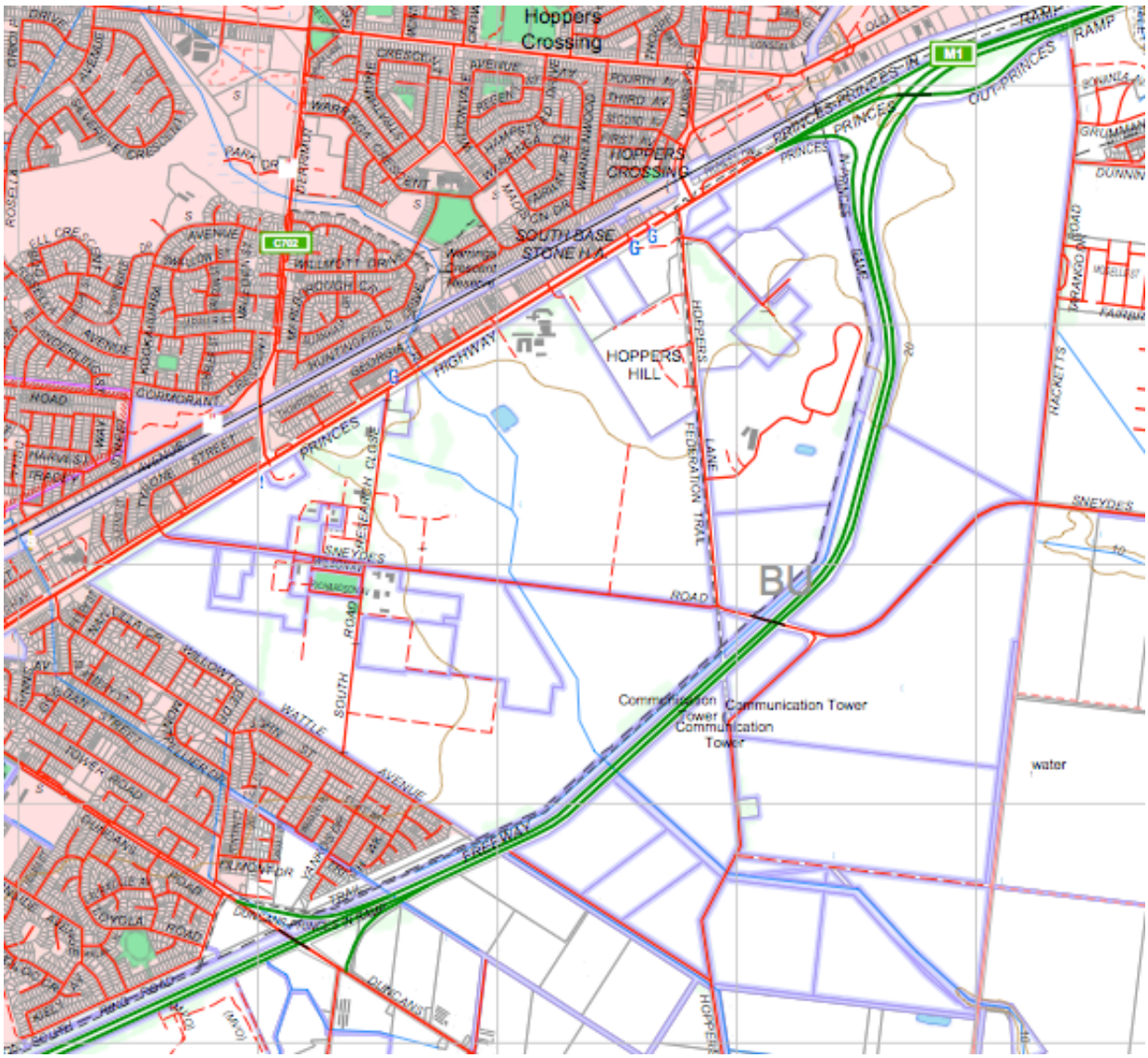
Table 13 Council Planning Schemes

Address / Lot/Plan Crown Description	Planning Zones	Planning Overlays	Heritage Register
Allotment 2019 Parish Deutgam (Hoppers Lane) Allotment 2020 Parish Deutgam (Hoppers Lane) Allotment 2024 Parish Deutgam (Hoppers Lane) Allotment 2025 Parish Deutgam (Hoppers Lane) 671 Sneydes Road 240 Hoppers Lane 8 South Road	❒ Special Use Zone – Schedule 5 (SUZ5) ❒ Schedule to the Special Use Zone – Schedule 5	❒ Development Plan Overlay (DPO) ❒ Development Plan Overlay – Schedule 4 (DPO4)	None
246 Hoppers Lane Werribee	❒ Special Use Zone – Schedule 5 (SUZ5) ❒ Schedule to the Special Use Zone – Schedule 5	❒ Design and Development Overlay (DDO) ❒ Design and Development Overlay- Schedule 1 (DDO1) ❒ Development Plan Overlay (DPO) ❒ Development Plan Overlay – Schedule 4 (DPO4)	None
600 Sneydes Road	❒ Public Use Zone – Service and Utility (PUZ1) ❒ Schedule to the Public Use Zone – Schedule 5 (SUZ5) ❒ Schedule to the Special Use Zone – Schedule 5	❒ Design and Development Overlay (DDO) ❒ Design and Development Overlay- Schedule 1 (DDO1) ❒ Development Plan Overlay (DPO) ❒ Development Plan Overlay – Schedule 4 (DPO4) ❒ Heritage Overlay (HO) ❒ Heritage Overlay Schedule (HO75)	VHR H1961 – State Research Farm
200 Hoppers Lane	❒ Farming Zone – Schedule 2 (FZ2) ❒ Schedule Farming Zone – Schedule 2	❒ Development Plan Overlay (DPO) ❒ Development Plan Overlay – Schedule 4 (DPO4)	None

4 Topography, Geology and Hydrogeology

4.1 Topography

The site is relatively flat with a ground elevation of approximately 20 m AHD (refer to topographic map below). The general fall of the land is to the south east.

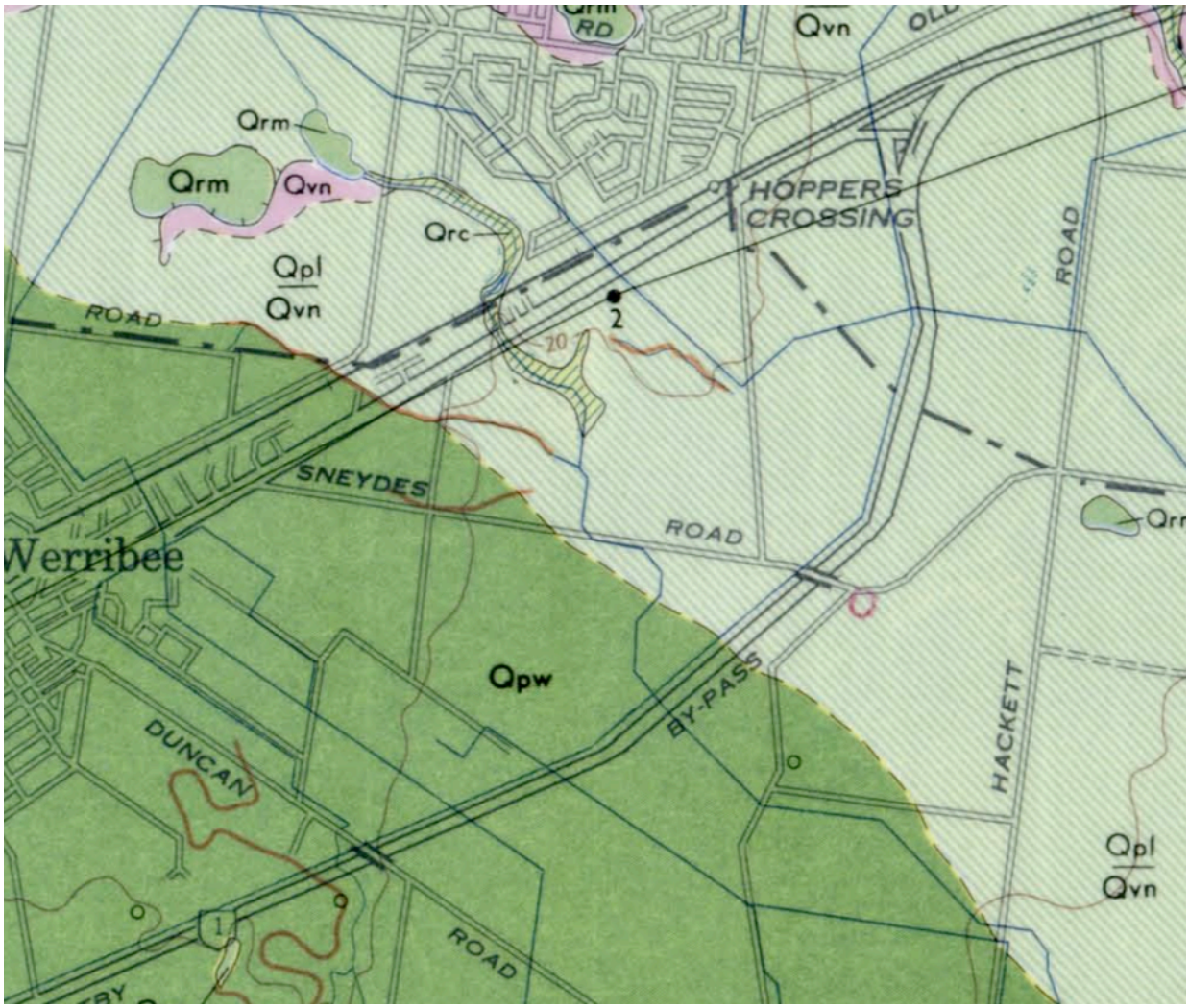


VicMap Topographic Map 1:30,000
Map No. T7822-3-2-N
(Note, all elevations are provided in m AHD)

4.2 Regional Geology

The Geological Survey of Victoria 1:63,360 series Melbourne Map sheet indicates the majority of the site (with the exception of the south western part) is underlain by Quaternary Newer Volcanics formation (Qvn; olivine basalt, olivine labradorite basalt, dark to light grey, coarsely vesicular, minor inter-bedded silty clay and baked soils) overlain by a thin veneer of windblown silt and clayey silt (Qpl). The south western area of the site is underlain by Quaternary Deutgam Silt (Qpw) comprising silt, grey to grey brown, with abundant carbonate nodules, gravel, sand, silty sand in lower parts of the sequence, minor gravel and sand of levees.

Quaternary colluvium (Qrc; comprising minor slump deposits, poorly sorted gravel, sand and sandy silt) is shown to be present in the area along the alignment of the drainage channel (entering the north of the site).



Regional Geology
(Extract from The Geological Survey of Victoria 1:63,360 series Melbourne Map sheet)

4.3 Regional Hydrogeology

A review of the Department of Sustainability *Victorian Resources Data Warehouse* identified 17 groundwater bores at the site. The intended purpose of the wells is unknown.

The wells were installed to depths ranging from 15.5 m to 248.5 m below ground level. Groundwater bore details are summarised in table 14 below. The groundwater bore location plan, tabulated bore report details and available bore lithologies and groundwater chemistry data are included in appendix H.

Table 14 On-site Groundwater Bores

Bore ID	Install date	Bore depth (m)	Screen length (m)	Upper screened interval (m bgl)	Lower screened interval (m bgl)	Electrical conductivity (uS/cm)	Total soluble salts (mg/L)	pH
BORE 59857	9-Dec-75	38.0	8.000	38.000	30.000	-	-	-
BORE 59858	9-Dec-75	38.31	8.000	38.000	30.000	-	-	-
BORE 59940	13-Apr-82	45.56	-	-	-	-	-	-
BORE 59726	1-Jan-70	39.6	-	-	-	-	-	-
BORE 59517	25-Aug-65	25.9	1.830	13.100	11.270	-	-	-
BORE 60039	10-Nov-82	248.5	-	-	-	-	-	-
BORE 129210	26-Oct-96	38.0	12.500	38.000	25.500	3,100	-	-
BORE 59581	27-May-70	44.8	-	-	-	4,292	2,519	8.80
BORE 59710	1-Jan-70	18.3	-	-	-	-	-	-
BORE 59877	7-Apr-82	45.56	-	-	-	-	-	-
BORE 59725	1-Jan-70	18.3	-	-	-	-	-	-
BORE 306038	16-Oct-81	189.0	-	-	-	4,850	3,148	8.40
BORE 115713	18-Mar-94	31.0	4.000	31.000	27.000	12,000	7,193	8.20
BORE 115054	24-Nov-94	15.5	0.500	15.500	15.000	1,800	-	-
BORE 59879	13-Apr-82	45.56	-	-	-	-	-	-
BORE 59859	5-Dec-75	38.0	8.000	38.000	30.000	-	-	-
BORE 59878	8-Apr-82	45.56	-	-	-	-	-	-

Notes: Bgl = below ground level, "-" = Unknown

The regional groundwater is expected within the underlying basalt; at a depth of 10-20 m. Given the likely presence of a near surface layer of silts at the site, there is the possibility of a shallow and localised aquifer system in areas of former swampy deposits. The shallow groundwater, if present, could potentially be discharging to the shallow drainage channel that traverses the site.

The topography and elevation of the land suggest the direction of regional groundwater flow to be in a southerly/south easterly direction towards Port Phillip Bay.

The nearest surface water bodies include the Werribee River located approximately 2.8 km to the south west and the Port Phillip Bay located approximately 3.8 km to the south east of the site at its closest point.

5 Site History Review

The following sources of information were researched to determine the history of the site and the adjacent land:

- ❒ Review of historical aerial photographs at the Aerial Photography Library, Land Information Centre, Laverton.
- ❒ Enquiry to local historical society.
- ❒ Review of early State Research Farm building report (Sands 2001).
- ❒ Review of EPA Priority Sites Register.
- ❒ Discussion with local Council regarding the history of the area (including the location of former/current council waste transfer/disposal tips).
- ❒ Search for available trade waste records.
- ❒ Review of available property sewerage plans.
- ❒ Discussion with available site personnel.
- ❒ Review of available DPI historic plans.

The findings of the site history review are summarised below.

5.1 Review of Historical Aerial Photographs

A total of 28 historical aerial photographs dated between 1951 and 1991 were viewed. Observations interpreted from the photographs are provided in tables 15 to 22 below. Copies of the aerial photographs are provided in appendix C.

Table 15 Summary of Historical Aerial Photo Review - Zone A

Photograph	Observations
01/1951 Run: 23 Film: 1417 Photo: 149 Scale: 1:12000	❒ A large group of buildings are present in the south east corner of the zone (currently known as the Old Farm). ❒ To the east and south east of the Old Farm compound there is a number of small structures that appear to be sheds. ❒ Irrigation furrows overlay the eastern half of the zone. ❒ In the far north of the zone a building can be seen in the area of the Student Residences. ❒ A building expected to be the Farm Manager's residence is located in the northern part of the zone with a number of attached sheds. ❒ A dam is situated north of the Old Farm buildings. ❒ A second dam is located centrally within the zone. ❒ A drainage channel can be seen transecting the zone in a west to east direction. ❒ The A. R. Raw Laboratory building is visible to the west of the Old Farm. ❒ The men's quarters can be seen to the north east of the Old Farm.
02/1960 Run: 24W Film: 1099 Photo: 56 Scale: 1:9600	❒ A shed to the east of the farm manager's house is no longer visible. ❒ The structures to the south east of the old farm building are no longer visible. ❒ A car park is now visible in the area of the Student Residences in the north of the zone. ❒ An unknown structure (building?) is present to the north of the Old Farm building. ❒ The A. R. Raw laboratory building appears to have another wing attached to its north. ❒ A shed can be seen to the north of the A. R. Raw laboratory.
12/1965	❒ Development has occurred in the area of the Student Residences, with another building to the

Run: 14W Film: 1896 Photo: 15 Scale: 1:19200	south. ❒ Buildings have been constructed to the north of the A. R. Raw laboratory. ❒ The structures to the east of the Old Farm are no longer visible. ❒ A shed is present to the south west of the Old Farm. ❒ A number of grain silos have been constructed to the south of the Old Farm central building. ❒ A shed is present in the southern courtyard of the Old Farm. ❒ A shed is present north of the Old Farm.
12/1971 Run: 46 Film: 2561 Photo: 193 Scale: 1:9600	❒ No significant changes are visible.
03/1979 Run: 11 Film: 3370 Photo: 174 Scale: 1:10000	❒ Several buildings have been demolished in the southern section of the Student Residences in the north of the zone. ❒ A Spray Shed (noted on historical plans) is visible north of the Old Farm.
06/1991 Run: 21 Film: 4408 Photo: 159 Scale: 1:15000	❒ The farm manager's house is no longer visible and appears to have been demolished. ❒ The shed in the southern courtyard of the old farm is no longer visible.

Table 16 Summary of Historical Aerial Photo Review - Zone B

Photograph	Observations
01/1951 Run: 23 Film: 1417 Photo: 149 Scale: 1:12000	❒ Numerous residential houses are located in the north east of the zone along Wilson Avenue. ❒ Farm buildings are visible along the west side of South Road. ❒ The Old Dairy compound is located centrally east within the zone. ❒ The remainder of the zone appears to be covered in paddocks with irrigation furrows. ❒ The Gilbert Chandler building is visible in the north at the junction of Dairy and Sneydes Road.
02/1960 Run: 24W Film: 1099 Photo: 56 Scale: 1:9600	❒ There has been an increase in the number of residential properties in the north east of the zone along Wilson Avenue. ❒ More residential houses are constructed to the south east of Wilson Avenue. ❒ A potential drainage structure is visible extending in a westerly direction from the Old Diary Compound.
12/1965 Run: 14 Film: 1896 Photo: 15 Scale: 1:19200	❒ No significant changes are visible.
12/1971 Run: 46 Film: 2561 Photo: 193 Scale: 1:9600	❒ The Gilbert Chandler building appears to have had an addition made to it in the form of an east wing. ❒ There appears to be an additional building located to the north of the Old Dairy.
03/1979 Run: 11 Film: 3370 Photo: 174 Scale: 1:10000	❒ No significant changes are visible.
06/1991 Run: 22W Film: 4408 Photo: 137	❒ A northern building has been demolished in the Old Dairy, while another one has been built slightly to the west of the former building. ❒ A number of residential properties along Wilson Avenue have been demolished. ❒ The drainage structure heading west from the Old Dairy Compound now appears to be overgrown

Scale: 1:15000	and no longer in use. ❒ The Food Science Australia facility has been constructed along Sneydes Road to the west of the Gilbert Chandler College. This building appears to have a large pile of disturbed soil to its west.

Table 17 Summary of Historical Aerial Photo Review - Zone C

Photograph	Observations
01/19 Run: 23 Film: 1424 Photo: 149 Scale: 1:12000	❒ The site appears to be open farmland.
02/1960 Run: 24 Film: 1099 Photo: 54 Scale: 1:9600	❒ A small building appears in the very northern area of the zone.
12/1965 Run: 13 Film: 1896 Photo: 35 Scale: 1:19200	❒ A large area of disturbed soil can be seen in the north of the zone. ❒ Three buildings and an access road are now visible in the north.
12/1972 Run: 45 Film: 2572 Photo: 49 Scale: 1:9600	❒ The Melbourne University Veterinary Science Facility has been constructed centrally within the zone. It has a large number of buildings and associated car parking areas. ❒ There appears to be three distinct paddocks to the south of the University buildings.
03/1979 Run: 10 Film: 3321 Photo: 160 Scale: 1:10000	❒ No significant changes are visible.
06/1991 Run: 22W Film: 4408 Photo: 127 Scale: 1:15000	❒ A building has been demolished from the south west area of the University buildings. ❒ The site has similar layout to the present.

Table 18 Summary of Historical Aerial Photo Review - Zone D

Photograph	Observations
01/1951 Run: 23 Film: 1424 Photo: 149 Scale: 1:12000	❒ A number of buildings can be seen along the east side of North Road, including the shearing shed (as currently located at the site). ❒ The tractor testing ground is located in the western half of the zone. ❒ A building is now located south of the tractor testing ground (in the area of the current piggery). ❒ The land in the eastern part of the zone is open paddocks.
01/1951 Run: 23 Film: 1424 Photo: 148 Scale: 1:12000	❒ A number of drainage channels are visible across the paddocks; one flowing along the northern boundary of the zone and then turning in a southerly direction, the other flowing from the west and then joining the above channel. The location of the channels appears to be as observed at the time of site inspection. ❒ There is a dam located near the junction of the drainage channels.
02/1960 Run: 24 Film: 1099 Photo: 55 Scale: 1:9600	❒ The tractor testing ground has been moved to the west. ❒ A building has been constructed in the south west of the zone. ❒ A number of additions have made to the buildings along the east side of North Road. ❒ A cricket pitch has been constructed in the north west of the zone. ❒ A stockpile of soil is located to the south of the cricket pitch.
12/1965 Run: 14 Film: 1896 Photo: 15 Scale: 1:19200	❒ A number of buildings have been constructed in the area of the piggery. ❒ Areas of disturbed soil are visible in areas indicated by DPI to have been used for burial of animal carcasses.
12/1971 Run: 46 Film: 2561 Photo: 192 Scale: 1:9600	❒ The tractor testing track is visible north of the piggery. The track is consistent with the current layout. ❒ South of the tractor testing track there appears to be an area of disturbed soil (refuse pile). ❒ Several more buildings have been constructed in the area of the piggery.
03/1979 Run: 11 Film: 3370 Photo: 174 Scale: 1:10000	❒ Animal enclosures have been constructed in the south west of the zone. ❒ An area of construction is visible in the north east of the zone. ❒ Additional buildings have been constructed to the south and east of the piggery area.
06/1991 Run: 22W Film: 4408 Photo: 137 Scale: 1:15000	❒ A large area of disturbed soil is visible to the south of the tractor testing track. ❒ A large tract of disturbed soil can be seen in the far eastern corner of the zone. This appears to be associated with the Melbourne Water Hoppers Crossing Pumping Station (located to the north east of the site). ❒ A large dam and an area of stockpiled soil is visible along the northern boundary of the zone.

Table 19 Summary of Historical Aerial Photo Review - Zone E

Photograph	Observations
01/1951 Run: 23 Film: 1424 Photo: 149 Scale: 1:12000	❒ The zone contains several paddocks and irrigation furrows. ❒ A drainage channel runs along the northern boundary of the zone and then south through the eastern area.
02/1960 Run: 25 Film: 1087 Photo: 58 Scale: 1:9600	❒ In the north west corner of the zone a building complex in the current area of the State Chemistry Laboratory has been constructed with large building and a number of smaller structures visible. This is thought to be the S.S. Cameron Laboratory.
12/1965 Run: 14W Film: 1896 Photo: 15 Scale: 1:19200	❒ Some alterations have been made to the area of the current State Chemistry Laboratory with the addition of small shed like structures to the south east.
12/1971 Run: 46W Film: 2561 Photo: 192 Scale: 1:15000	❒ Further additions have been made to the State Chemistry Laboratory with a new large building constructed to replace the small shed like structures to the south east. ❒ Sheep Yards E17 have been constructed centrally within the zone. ❒ Areas of disturbed soil can be seen in the far south east in the area of buried carcasses.
03/1979 Run: 11 Film: 3370 Photo: 174 Scale: 1:10000 **03/1979** Run: 11 Film: 3370 Photo: 172 Scale: 1:10000	❒ Development in the area of the State Chemistry Laboratory area has increased, with the addition of a new south wing to the large easterly building. ❒ A number of sheds and stock yards can now be seen to the east of the State Chemistry Laboratory. ❒ Areas of disturbed soil are located along the area of the drainage channel in the eastern area of the zone. ❒ A car park has been constructed to the south of the area of the State Chemistry Laboratory. To the south of this car park area there is a new large building constructed.
06/1991 Run: 22W Film: 4408 Photo: 137 Scale: 1:15000	❒ The building in the far north west area of the State Chemistry Laboratory has now been demolished. ❒ The car park area to the south of the area of the State Chemistry Laboratory is no longer in use and is overgrown with vegetation ❒ A building has been constructed in the north east area of the zone. ❒ The area of the Melbourne Water City Trunk Sewer appears to have large areas of disturbed soil along its length.

Table 20 Summary of Historical Aerial Photo Review - Zone F

Photograph	Observations
01/1951 Run: 22 Film: 1424 Photo: 149 Scale: 1:12000	❒ The zone appears to be open farmland with irrigation furrows.
02/1960 Run: 24W Film: 1099 Photo: 54 Scale: 1:9600	❒ No significant changes are visible.
12/1965 Run: 13W Film: 1896 Photo: 34 Scale: 1:19200	❒ No significant changes are visible.
12/1971 Run: 46W Film: 2561 Photo: 191 Scale: 1:15000	❒ The paddock in the north west corner of the zone is showing a different layout in fencing/cultivation.
01/1979 Run: 10 Film: 3321 Photo: 160 Scale: 1:10000 **03/1979** Run: 11 Film: 3370 Photo: 172 Scale: 1:10000	❒ No significant changes are visible.
06/1991 Run: 22W Film: 4408 Photo: 137 Scale: 1:15000 **06/1991** Run: 22W Film: 4408 Photo: 137 Scale: 1:15000	❒ A water trough is now visible in the north west corner of the zone.

Table 21 Summary of Historical Aerial Photo Review - Zone G

Photograph	Observations
01/1951 Run: 22 Film: 1424 Photo: 149 Scale: 1:12000 **01/1951** Run: 23 Film: 1417 Photo: 149 Scale: 1:12000	❒ The zone appears to be open farmland with irrigation furrows. ❒ A dam (now known as dam E03) can be seen centrally along the eastern boundary.
02/1960 Run: 24W Film: 1099 Photo: 52 Scale: 1:9600	❒ A paddock in the south of the zone has been divided into numerous sections.
12/1965 Run: 13W Film: 1896 Photo: 34 Scale: 1:19200	❒ The zone appears to have had another change in the pattern of farm activities; the paddocks have been divided and split again into separate sections.
12/1971 Run: 45W Film: 2572 Photo: 47 Scale: 1:15000	❒ The zone fencing and separation now appears to have been converted back to a more open farmland layout.
01/1979 Run: 10 Film: 3321 Photo: 160 Scale: 1:10000 **01/1979** Run: 11 Film: 3370 Photo: 171 Scale: 1:10000	❒ The paddock in southern part of the zone appears to have been ploughed.
06/1991 Run: 21W Film: 4408 Photo: 157 Scale: 1:15000	❒ Several small buildings have been constructed in the north east of the zone.

Table 22 Summary of Historical Aerial Photo Review - Zone H

Photograph	Observations
01/1951 Run: 23 Film: 1417 Photo: 149 Scale: 1:12000	❒ The zone appears to be open farmland. ❒ A dam (now known as dam E04) is visible in the north east corner of the zone.
02/1960 Run: 25W Film: 1087 Photo: 57 Scale: 1:9600	❒ To the west of the zone there appears to be some potential construction in the area were the drainage channel intersects the site.
12/1965 Run: 14W Film: 1896 Photo: 17 Scale: 1:19200	❒ Farm Shed E14 can be seen along the south west boundary. ❒ A residential house has been constructed in the central west of the zone. ❒ Sheep yard E06 is visible east centrally.
12/1971 Run: 46W Film: 2561 Photo: 191 Scale: 1:15000	❒ Cattle Yard E11 has now been constructed south centrally. ❒ The addition of a shed has been made to the east of the central residential property. ❒ Silage pit E15 has been constructed to the west of Farm Shed E14.
01/1979 Run: 11 Film: 3370 Photo: 171 Scale: 1:10000 **01/1979** Run: 11 Film: 3370 Photo: 172 Scale: 1:10000	❒ Sheep Yard E09 is now visible in the north west of the zone. ❒ An unknown structure has been constructed along the north west boundary. ❒ Sheep Yard E10 is visible centrally within the zone.
06/1991 Run: 22W Film: 4408 Photo: 136 Scale: 1:15000	❒ Pump Shed E12 has been constructed to the east of Farm Shed E14 along the south west boundary of the zone. ❒ Dam E16 has been constructed along the south west boundary of the zone. ❒ Disturbed soil is located in the south of a tree wind break in the north of the zone. This appears to be consistent with the area of Dam E05 identified during the site inspection.

5.2 Review of Historical Aerial Photographs - Site Surroundings

Observations interpreted from the historical aerial photographs for the surrounding areas are provided in table 23 below. Copies of the aerial photographs are provided in appendix C.

Table 23 Summary of Historical Aerial Photo Review – Surrounding Areas

Photograph	Observations
1951 Various	❒ The areas surrounding the site predominantly comprise open farmland, with the exception of several areas of isolated pockets of residential housing to the north west. ❒ Market gardens are located to the south and west of the site. ❒ The Melbourne to Geelong railway is located to the north of the site. ❒ The Princes Freeway is yet to be constructed through the site. A drainage channel is located along the alignment of the future Princes Freeway.
1960 Various	❒ A petrol station has been constructed to the north of the site along the Princes Highway, consistent with the current location.
1965 Various	❒ The areas of residential housing to the north west of the site have expanded. ❒ Areas of residential properties are being developed to the south west of the site. ❒ The Princes Freeway has been constructed, dividing the site.
1979 Various	❒ Significant residential development has commenced to the north of the site in the current area of Werribee.
1991 Various	❒ Residential development to the north west of the site has increased. ❒ The Melbourne Water Hoppers Crossing Pumping Station has been constructed. ❒ The Victoria University of Technology has been constructed, including the driver training track in its current location.

5.3 Enquiry to Local Historical Society

Compass Environmental made an enquiry to the local Historical Society of Werribee on 11 March 2009 and discussed the site's history with Mr Lance Pritchard. Mr Pritchard is a co-author of a historical publication about history of the Werribee region titled *Werribee The First 100 Years* (James and Pritchard 2008).

Only limited site history information was provided Mr Pritchard and the above publication, as follows:

- ❒ Before the mid 1830s, Werribee was mainly made up of open plains. It was in 1836 when the first settlers arrived, with a small portion of Werribee being utilised for farming of crops and grazing of cattle and sheep.
- ❒ The site was originally established as the State Research Farm by the Government in 1912, occupying 405 hectares of what was previously known as the Werribee Park Estate. The State Research Farm was established for the purpose of improving agricultural productivity in Victoria. Experiments initially adopted included wheat improvement, crop rotation, manure treatment, solving irrigation issues, study of moisture movement in soil, soil nitrification, livestock milk yield and export of sheep for mutton. A plan from the Department of Agriculture State Research Farm Werribee Victoria 1964 provided by the Historical Society shows the layout of the site in 1964 (refer to Appendix I).
- ❒ A School of Dairy Technology was opened within the State Research Farm in 1939. The facility was extended in 1968 with the construction of the Gilbert Chandler Institute of Dairy Technology.

- During operation of the State Research Farm buildings were erected to facilitate continuing expansion and changes. The University of Melbourne Veterinary Science Clinic was established at the site in the late 1960's.

5.4 Review of Early State Research Farm Building Report

In 2001 Robert Sands Pty Ltd conducted a review of the significance of the remaining early State Research Farm buildings for the Department of Natural Resources and Environment (Sands 2001).

The report provided the following information regarding the history of the site:

- In 1912 a block of land of approximately 466 hectares located along Melbourne-Geelong Railway line was transferred to the Department of Agriculture for the Central Research Farm (later renamed to the State Research Farm). In 1912 the site comprised five large paddocks, named after their previous owners. Two dams were noted to be present along the shallow drain in the western and central parts of the site (refer to figure 4 in Sands 2001).
- Prior to establishing the State Research Farm, the land was used for growing oat hay.
- Within several years of the formation of the State Research Farm, the majority of the land was subdivided into rectangular paddocks of 10 acres or multiples.
- A site plan dated 1913 (figure 5 in Sands 2001) indicated a farm buildings complex comprising a H shaped group of buildings to the west of the intersection of West Road and North Road. Two large and one small dam were located to the north of the farm buildings. A Railway Field was shown adjacent to the Melbourne to Geelong Railway in the north east part of the site, adjacent to the outfall sewer line. A small dam was noted in the north west corner of the railway field.
- Around 1915 a further 400 hectares was purchased, increasing the farm's area to approximately 843 hectares.
- The Farm Buildings area (referred to elsewhere in this report as the Old Farm) was located on the highest point of the land and included an office building, brick silos, a hay shed with a laboratory, stables which later were used for servicing of tractors, farm store, carpenters workshop, blacksmith forge and machinery area, numerous machinery sheds, manager's house, a dairy and barn.
- In 1919 farm residential men's quarters were built (to the north east of the main farm buildings) to accommodate returned soldiers after the First World War, as part of the training in the new agricultural techniques before their settlement on farms. The buildings were removed in 1997.
- A large dam was present to the north of the men's quarters. The dam was still present at the site in 2001, described as a sanctuary for birds with willows and tamarisks growing around the banks.
- Around the 1920s a wooden building, which formed a part of the Department of Agriculture's Pavilion at the Royal Show grounds, was located to the south west of the men's quarters. The building was used as living quarters for some years and then became a store. The building was removed in 1997.
- Houses for families were built in various parts of the farm. The residential houses along the highway were built just after the Second World War, with the houses along Wilson and Richardson Streets were built over a period of 1912 to 1970.
- In 1922 student quarters were opened for students on the North Road near the Highway.
- A brick research laboratory with glasshouses was built in 1937 to the west of the main farm buildings. This building was extended in the 1960s, with the new wings named the George S. Gordon and Alan R Raw Laboratories.

- In 1939 the School of Dairy Technology was built and was extended in 1965. The buildings soon became inadequate and in 1968 the Gilbert Chandler Institute of Dairy Technology was built on the same site (on the corner of West Road (current Sneydes Road) and Diary Road).
- In 1960 the S.S. Cameron Laboratory for research of animal husbandry was built at the corner of South and East Roads.
- The dairy was moved to its current site on Dairy Road in 1942.
- By the mid 1980's the State Research Farm started to diversify, with three section emerging: an Animal Research Institute, a Food Research Institute and Agricultural Engineering Unit. A portion of the land was leased.

A review of a 1988 plan of the site (Figure 9 in Sands 2001) showed buildings layout at that time. The northern two buildings of the H-shaped complex in the Old Farm area were used to house workshops, store and garage, with the central and southern buildings occupied by machinery sheds and a cereal research barn. The former men's quarters (used for staff accommodation) with an adjacent garage and a septic tank were still present to the north east of the old building complex. An incinerator was noted immediately north of the glasshouse complex in the north west section of the Old Farm area. A research farm was located in the south east corner of the area. A large swamp (former dam), a dam and a lily pond were marked to the north of east of the main building area.

5.5 EPA Victoria Priority Sites Register

Compass Environmental conducted a search of the EPA Priority Sites Register on 3 March 2009 and 16 March 2009. The search indicated that the site is not listed on the register. The nearest known Priority Site was Werribee Zoo, located approximately 4.1 km from the site. A copy of the extracts from the Register is included in Appendix D.

5.6 Enquiry to Local Council

Enquiries to the local Wyndham City Council on 3 and 10 March 2009 provided very limited information regarding the site, as follows:

- No known Council landfills were located at the site. The closest known landfill to the site was the Wests Road landfill, located approximately 8.4 km to the south west of the site.
- Alterations were made to a laboratory on 6 September 2001. No specific address was available.
- Additions were made to the Food Processing Plant in 2000.
- Alterations were made to an unknown office in 2000.
- Alterations were made to room 315 (building unknown) on 6 July 2003.

Council indicated that additional planning and building permit information was likely held in archives, however sufficient time was not available as part of this investigation to obtain the archived planning and building permits for the site.

5.7 Enquiry to the Local Water Authority

5.7.1 Trade Waste

Compass Environmental made an enquiry to the local water authority, City West Water. The enquiry indicated several current Trade Waste Agreements are associated with the site. The information made available is listed in table 24 below.

Table 24 Trade Waste Records

Street Name	Trade Waste Agreement Entity
Hacketts Lane	None listed
Hoppers Lane	Victorian University of Technology
North Road	Monash University Physiology Department
Princes Hwy	University of Melbourne Vet Science Clinic
Sneydes Road	Victorian Institute of Animal Science Piggery
	National Foods Limited
	Department of Primary Industries
	Department of Primary Industries Piggery Research
	Victorian Institute of Animal and Science
	Food Science Australia
South Road	CSIRO Livestock Industries
	INCITEC limited

A written consent from the entities holding the trade waste agreements will be required to obtain any further information regarding the available records. This information could not be obtained within the time available for this review.

5.7.2 Property Sewerage Plans

Property Sewerage Plans are managed on behalf of City West Water by Casey Services. The plans provided by Casey Services are detailed in tables 25 to 28 below. No plans were available for zones C, F, G and H. Copies of plans are included in appendix F.

Table 25 Property Sewerage Plans - Zone A

Property Sewerage Plan No.	Date of Plan	Observations
P.S 578128 – Werribee MCS003907	20/12/94	❒ Workshop garage located on the old farm property north of the hay shed. ❒ Machinery shed located south of the hay shed.
P.S 578128 Sewerage Plan Scale: 1:2500	20/6/95	❒ Fodder Conservation Research Shed located north of Sneydes Road. ❒ Workshop garage located on the old farm property north of the hay shed. ❒ Machinery shed located south of the hay shed. ❒ Two laboratory buildings located west of the workshop garage.

Table 26 Property Sewerage Plans - Zone B

Property Sewerage Plan No.	Date of Plan	Observations
P.S 578128/23 Werribee	23/02/96	❒ Gilbert Chandler School of Dairy Technology.
P.S 578128/10 Werribee	3/1994	❒ Laboratory and photo sinks and possible waste acid discharge points located in the food pilot building. ❒ Floor waste located in the food pilot building. ❒ Laboratory, engineering, microbiology and chemistry rooms located in the Gilbert Chandler Institute Building.
P.S 578128 Sewerage Plan Scale: 1:2500	20/6/95	❒ Gilbert Chandler Institute of Dairy Technology located south of Sneydes Road.
P.S 578128/34	30/04/96	❒ "Relocated Tuckshop" located west of lecture room containing a portable grease interceptor trap. ❒ Storm water drain visible on the perimeter of the Gilbert Chandler Institute labelled "S" on the broken lines on plan.

Table 27 Property Sewerage Plans - Zone D

Property Sewerage Plan No.	Date of Plan	Observations
P.S 578128 – Werribee MCS003907	20/12/94	❒ Machinery shed located east of North Road. ❒ Poultry pens located east of machinery shed. ❒ Piggery located further east from poultry pens. ❒ Isolation lab located south of the piggery. ❒ Animal Research Institute located further south of the piggery. ❒ A sewerage drain runs west from the Animal Research Institute Building to North Road.
P.S 578128 Sewerage Plan Scale: 1:2500	20/6/95	❒ Machinery shed located east of North Road. ❒ Poultry pens located east of machinery shed. ❒ Artificial Insemination Quarantine Shed located north of Sneydes Road.

Table 28 Property Sewerage Plans - Zone E

Property Sewerage Plan No.	Date of Plan	Observations
P.S 578128 – Werribee MCS003907	20/12/94	❒ S.S. Cameron Animal Research Laboratory (currently known as State Chemistry Laboratory) located south of Sneydes Road. ❒ Incinerator room/ Post Mortem located south at the S.S. Cameron Animal Research Laboratory.
P.S 578128 Sewerage Plan Scale: 1:2500	20/6/95	❒ S.S. Cameron Animal Research Laboratory located south of Sneydes Road. ❒ Incinerator room/ Post Mortem located south at the S.S. Cameron Animal Research Laboratory. ❒ Store and workshop located south of the Incinerator room/ Post Mortem. ❒ Experimental piggery located further south of the store and workshop.
P.S 578128/33 Trade Waste Plan page 1 of 2	27/05/96	❒ Milking Shed located south of the P.H.I.M.R. Animal House (currently known as MRTC – Meat Research & Training Centre). ❒ Silt pit located west in the P.H.I.M.R. Animal House. ❒ Sampling point located south of the silt pit. ❒ Sampling point from the pumpwell/macerator (slurry waste breakdown) located further north of the silt pit.

		❒ Laboratory sink, floor waste areas and silt pit located inside the P.H.I.M.R. Animal House.
P.S 578128/33 Trade Waste Plan page 2 of 2	27/05/96	❒ Existing sewer drain visible south of proposed building running east on plan.
P.S578128/12	07/12/95	❒ Silt trap and silt pit located at the west end of the P.H.I.M.R. Animal House building. ❒ IC – inspection chamber (a sewer pit) located further north west and south west of the silt pit and silt trap. ❒ NA 8 – neutralising apparatus (a chemical pit for buffering waste before discharge) located south of the silt trap and silt pit. ❒ GIT – Grease interceptor trap located north of the silt trap and silt pit.

5.8 Interview with Site Personnel

Compass Environmental conducted interviews with various site personnel to obtain an understanding of the operational history of the site. The following sections provide a summary of relevant information discussed at the meetings.

5.8.1 Department of Primary Industries – All Zones

An interview was conducted with Mr Gary Nugent (DPI Facilities Manager) and Lynn McClusky (Facility Officer) on 25 February 2009. The following information was provided:

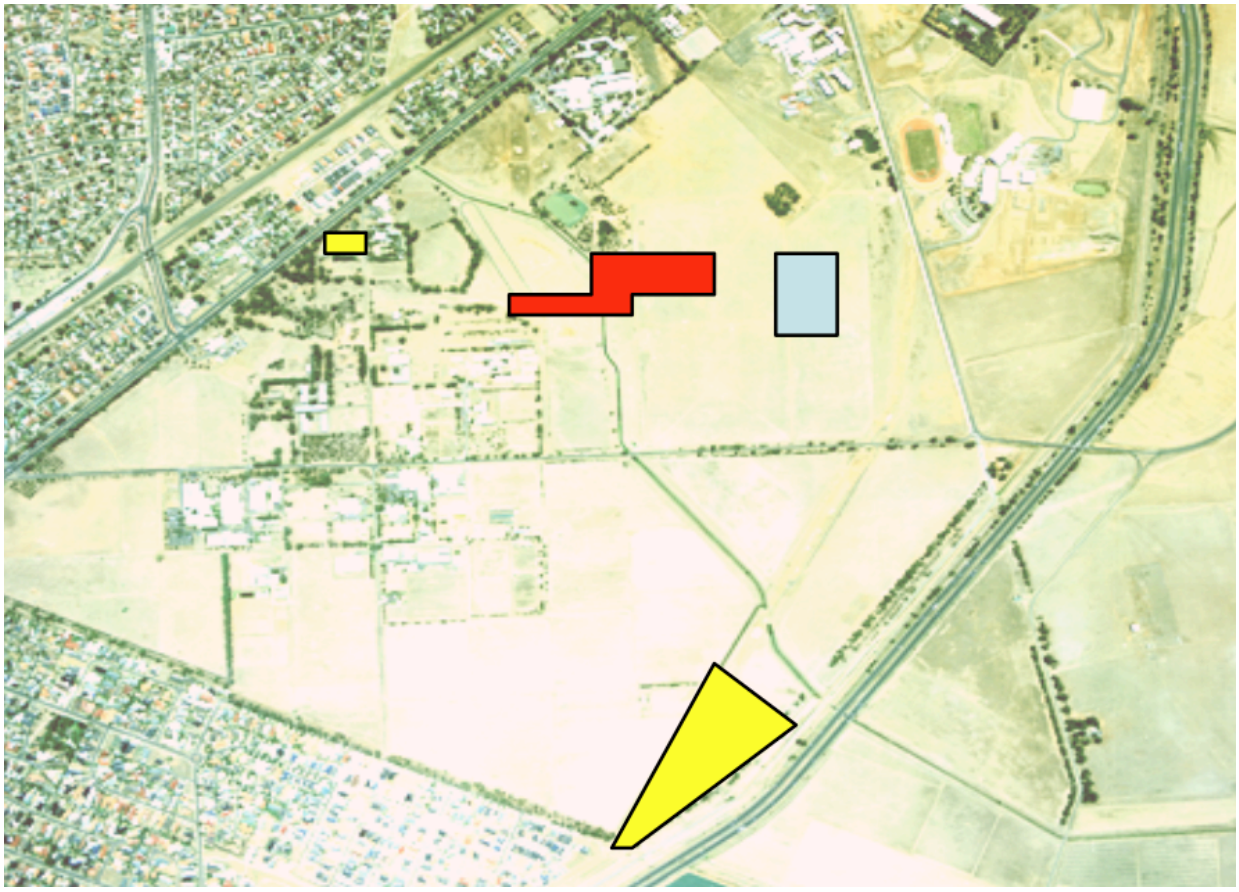
- ❒ The site was originally constructed as a Department of Agriculture Research Site in 1912.
- ❒ The east paddocks has been recently cropped.
- ❒ The site has been flood irrigated with up to 700 ML of water per year. This volume has significantly been reduced since 1997.
- ❒ A row of Monterey Pines (2.5 km) had been planted in 1912 along the western/southern boundary of the site. Trees were removed in recent years along a 1 km stretch in the northern area where the site directly abuts the adjacent residential properties.
- ❒ A water standpipe supplying recycled water from the Werribee Sewerage Farm is being constructed in the centre of the site.
- ❒ A former steam plant including a boiler was located near the heritage listed Old Farm Buildings, and was used for steam generation for the silos.
- ❒ Pivot is located at the site, however only operates as an analytical laboratory. No testing is conducted at the site.
- ❒ The Gilbert Chandler Building was constructed in 1938 and had a renovation in 1969.
- ❒ The area of the Vegetable Growers Association has had numerous tenants over the years, all predominantly engaged in research on the effectiveness of chemicals (such as herbicides, enhanced plant growth, etc).
- ❒ An incinerator was located in the Melbourne University Veterinary Clinic area for cremation of animals.
- ❒ The dam in the east of zone D was filled with refuse.
- ❒ The drainage channel had its flow restricted in the 1980s because of the construction of the West Gate Freeway to the south of the site; the drains beneath the freeway are understood to be too small, with the site forming a retention basis for flood waters. As the site has been designed for flood irrigation, when the site floods, very large areas are inundated. There are no longer any flushing flows and the drainage channel is now visibly full of rubbish and oily sediments.

- The WAG (Westernport-Altona-Geelong) high pressure oil pipeline travels through the east of the site.
- Building foundations at the site are all cracking; the cause was cited as likely due to the cessation of flood irrigation at the site approximately 12 years ago. A large variation was observed in the geology of the site, with some areas having swampy deposits (up to 3 m depth) and others having shallow tight clays.
- 23 residential houses were originally located on Wilson and Richardson Streets. The buildings were predominantly of weatherboard construction and formed a self sufficient community - a grocery store, mechanic, service station were all present in the area. These buildings were all demolished, however an exact date was unknown. Septic tanks were likely to have serviced these premises, however it is unknown if they were removed.
- A sump and pressurised sewer was located in the piggery.
- Effluent has historically been sprayed across the paddocks. This is still currently conducted at the site when deemed necessary.
- The site has low water pressure and poor drainage.
- Water leaks from the aging water supply infrastructure are very common.
- Farm vehicles are fuelled at the service station in Werribee.

Based on information provided by DPI, animal carcasses have been placed in numerous burial pits in three main areas at the site. These areas are shown in the plan below (known burial areas, as provided by DPI). Yellow and red marked areas depict the areas of carcass burial. Burial involved excavation of a hole or trench several metres deep, placement of the carcasses and capping with site derived clay soils of at least one metre thickness. Burial processes were still being conducted at the site in the southern zone at the time of assessment.

Animals that have been subjected to testing with radioactive tracer dyes have also been buried at the site (shown in red in the plan below, closer to the research facility buildings). This testing was understood to have been conducted using very low doses and affected low numbers of animals. The tracer dye used was predominantly Tritium 125 that has a half-life of approximately 12 years (Source: US Geological Survey). These practices were understood to have ceased at the site in the mid 1990s.

The light blue area on the plan below defines a burial area for general farm rubbish.



Known Burial Areas
(as provided by DPI)

5.8.2 Food Sciences Australia – Zone B

Compass Environmental conducted an interview with Murray Brown (Centre Manager from Food Science Australia) on 13 March 2009 regarding past uses of the site. Murray has been with Food Science Australia since approximately the late 1980s. The interview revealed the following:

- An underground tank is located on the north west side of the Gordon Chandler Building adjacent to the Food Science building in front of the furnace room. An environmental company had investigated the tank approximately 5 years ago, however no results were available for review.
- The Gordon Chandler Building was built in 1939.
- Trade waste pits were located to the rear of Gordon Chandler Building.
- The Food Science buildings have all been built recently.
- Food Science Australia has a trade waste agreement with City West Water.
- A number of trade waste and neutraliser pits are located in the Food Science property area.
- Empty 20 litre paint drums and 200 L drums are located south of shed.

5.8.3 University of Melbourne Veterinary Science Clinical Centre – Zone C

Compass Environmental conducted an interview with Diana Harrison (Facility General Manager) and Mike Jones (Maintenance Manager) from the University of Melbourne Veterinary Science Clinical Centre on 18 March 2009. Diana Harrison has been with Centre since early 2000 and Mike Jones has worked onsite for the past 18 months. The interview revealed the following:

- The large volume of soil stockpiled to the east of the Centre buildings was sourced from construction works at the Melbourne University Parkville Campus. No information was available to the contamination status of the soils, however were understood to have been sourced from excavation of a basement car park.
- The Centre was constructed in 1966.
- Contractors presently remove hazardous laboratory waste.
- Organic waste from horse stables was historically disposed to the south of the onsite dam. This practice was stopped 4 years ago.
- Weeds are sprayed with herbicide.
- Rabbit baits are used at the premises.
- All animals are treated/dosed in their stables.
- Farm vehicle and storage is in the garage to south of Equine Centre. The floor in the farm vehicle storage area was sealed with concrete 3 years ago.
- An incinerator is used onsite for the disposal of carcasses.
- A radioactive cancer ward is located onsite.
- Grease traps are present at the Centre.
- Three neutralising pits and trade waste pits are located onsite.
- A 2,500 L straining pit is located to the south of the commercial building.
- A hydronic heating system is present at the centre, with a hydronic boiler and underground storage tank containing heating oil present onsite.
- A plant room is present onsite.

5.8.4 CSIRO – Zone E

Compass Environmental conducted an interview with Sandy Mathewson (Facility General Manager) of the CSIRO Werribee Animal Health Science Centre on 18 March 2009. The interview revealed the following:

- A Trade Waste Agreement is in place to dispose generated effluent to sewer. Effluent is also irrigated over paddocks in accordance with an EPA approved irrigation system. A gas fired boiler is used to generate steam to treat the effluent prior to use or disposal.
- An incinerator is located onsite.
- A maintenance shed is located onsite.
- A 200 L drum of diesel is used to supply fuel for the tractor. The diesel is stored in the maintenance shed.
- Small quantities of cleaning fluids and disinfectants are used onsite.
- An autopsy facility is located onsite.
- A wash room is located onsite.
- Two bunded retention ponds are located onsite to inhibit runoff to neighbouring land in the event of a flood.

5.8.5 Department of Primary Industries – Zone A

Compass Environmental conducted an interview with Peter Langdon, the previous Research Farm Manager, on 18 March 2009. Peter Langdon has been with the State Research Farm since the late 1980s. The interview revealed the following:

- An underground fuel tank and associated bowser were located in the north courtyard of the Old Farm Compound.
- Three underground tanks were historically located along the western wall of the north east Old Farm buildings. These tanks have been removed.
- An underground tank and associated bowser were located at the southern end of the south west Old Farm building. This tank has been removed.
- A boiler and heating oil tank were historically located at a house (now demolished) between the Old Farm Compound and the Piggery.

5.9 Review of DPI Historic Plans

Compass Environmental conducted a review of relevant DPI Historic Plans. Additional plans (hundreds) were available for review, however the majority of plans showed building fit-out and construction details. Compass reviewed plans that were identified to enhance the understanding of the history of the site in the context of potential for contamination. No relevant plans were available for zones C, D, G and H. Details of reviewed plans are included in tables 29 to 32 below. Copies of reviewed plans are included in appendix E.

Table 29 DPI Historic Plans - Zone A

Year	Plan Reference	Observations
1969	Werribee Research Farm Erection of Silos, Sheds & Toilet Blocks, C, D C Bradbury, 4/7/69.	Layout of former buildings in north of Zone A. Pumphouse and tanks are shown to the south east of the Dam in the north central section of Zone A. Staff Quarters to the north east of the Managers House. “Experiments” shown in field to the far north east of the Managers House.
1988	Werribee Animal Research Institute, Renewal of Fire and General Service - Plan of Hydraulic Services, 87 922 H4C, E.N.G. Design & Drafting Services, T J Puszka,11-1-88.	Shed, Garage and Workshop to the south of the Managers House.
1988	Werribee Animal Research Institute, Renewal of Fire and General Service - Plan of Hydraulic Services, 87 922 H6B, E.N.G. Design & Drafting Services, T J Puszka,11-1-88.	The location of an Existing Incinerator Building north of A. R. Raw laboratory. Store shed, Garage and Septic Tank to north east of Old Farm Compound. Workshop and Garage in North West Old Farm Building. Workshop and Store in North East Old Farm Building.

Table 30 DPI Historic Plans - Zone B

Year	Plan Reference	Observations
1996	Geological Core Library, M1 63480, Scott Wilson Irwin Johnston Consulting Engineers, Dec 1996.	❒ The milking shed to the west of Diary Road is shown in the same location as the Old Dairy Compound as was viewed during the site inspection. ❒ A pump house to the south of the Gilbert Chandler building is shown.
1967	Department of Agriculture Victoria, State Research Farm Werribee Administrative Area, GLM, 7-9-67.	❒ The layout of the dairy area west of Dairy Road is shown.
1980	Department of Agriculture, Animal Research Institute Administration Area, GLM, 8-9-80.	❒ Buildings south of Richardson Avenue.

Table 31 DPI Historic Plans - Zone D

Year	Plan Reference	Observations
1974	Werribee State Research Farm SS Cameron Laboratory Extension to Experimental Piggery, D3340, Public Works Department Building Division, I G Paine, 15-7-74.	❒ The footprint of the piggery is shown. ❒ The machinery shed is shown to the west of the piggery. ❒ A manure spreader is shown to the north west of the piggery.
-	Rough Sketch of piggery, no reference markings.	❒ Plan shows areas of effluent storage in trenches to the north east.
1967	Department of Agriculture Victoria, State Research Farm Werribee Administrative Area, GLM, 7-9-67.	❒ The plan shows the location of a rubbish burial area to south of the tractor test area. ❒ An unnamed structure is shown to the east of poultry area with attached PVC piping.

Table 32 DPI Historic Plans - Zone E

Year	Plan Reference	Observations
1996	State Chemistry Laboratory Civil Works, 95857-C-01, STREET MOORHOUSE STRUCTURAL & CIVIL CONSULTANT, IDM, 12-3-96.	❒ Area on map marked “full of rubbish” and ”full of water” in the eastern part of the car park of the south east of the State Chemistry Laboratory.
1987	Werribee Research Farm, Plant Room in Extension of Cameron Laboratory, BH4401, HP, 31-8-87.	❒ Proposed site of underground 1,000 gallon oil storage tank shown to south of Laboratory. ❒ Incinerator building shown to south of Laboratory.

6 Site Inspection

Compass Environmental inspected the site and surrounding area between 25 February 2009 and 13 March 2009. The findings of the inspection are presented in appendix A. Associated photographs are included in appendix G.

The site inspection provided review of each zone with reference to the following:

- Land topography.
- Surface type and condition.
- Storm/surface water.
- Vegetation condition.
- Fuel storage (above/underground).
- Fuel infrastructure (pumps, vents, lines, etc).
- Triple interceptor traps.
- Drains and washrooms.
- Mechanical workshops.
- Hoist/mechanical pits.
- Waste disposal/burial.
- Chemical storage.
- Incinerators.
- Buildings.
- Electrical (transformers, generators, etc).
- Staining.
- Filling of soils.
- Waste streams.
- Odours.
- Other observations.

Limited access was available to the University of Melbourne Veterinary Science Clinical Centre. A visual inspection was conducted where possible from the surrounding properties and site areas.

The main observations made during the site inspections are depicted in figures 2 to 9.

7 Potential for Site Contamination

7.1 On-site

The potential sources of contamination at the site and associated contaminants identified based on the site history search and site inspection are summarised in tables 33 to 40 for zones A to H, respectively.

Table 33 Potential On-Site Contamination Issues - Zone A

Observation and/or Activity	Main Potential Contaminants	Medium
Storage of fuel or oil: ❒ USTs at the Old Farm (at least four locations). ❒ Heating oil tank at demolished residence between the Old Farm and the piggery. ❒ 200 L drums at Old Farm. ❒ Possible other areas historically.	Petroleum hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Area of former glasshouses. ❒ Area of former AR Raw Laboratory (~10 m x 8 m). ❒ Area of former Farm Manager's house. ❒ South of dam. ❒ Soil mounds, channels and levees for flood irrigation. ❒ Backfilled dam in east of zone (~100 m x 50 m). ❒ Backfilled silt dam running west-east in centre of zone. ❒ Soil stockpiles in north of the zone. ❒ Area of Student Residences (burial of carcasses). ❒ South of Student Residences. ❒ Possible other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil
Boiler located north of the Old Farm and at demolished residence between the Old Farm and the piggery.	Metals, polyaromatic hydrocarbons and petroleum hydrocarbons.	Soil and groundwater
Furnace room in the Old Farm buildings.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons.	Soil
Former incinerator at location of former glasshouses.	Metals and polyaromatic hydrocarbons	Soil
Triple interceptor trap in the Old Farm.	Metals, petroleum hydrocarbons, phenolics and solvents.	Soil and groundwater
Spray painting room in the Old Farm.	Solvents, metals and petroleum hydrocarbons	Soil and groundwater
Animal spray shed to north of Old Farm.	Metals (arsenic), organochlorine and organophosphate pesticides, synthetic pyrethroids and insecticides.	Soil and groundwater
Former blacksmith, forge and associated machinery in the Old Farm.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons	Soils
Storage and use of machinery: ❒ At the Old Farm (such as former mechanical pits with hydrocarbon stained	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons and solvents.	Soil and groundwater

Observation and/or Activity	Main Potential Contaminants	Medium
bricks). ❒ Other areas.		
Storage and use of chemicals such as herbicides and pesticides.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Car batteries stores in Old Farm building.	Lead and acids.	Soil
Dam in north of zone (now empty).	Metals and nutrients.	Soil
Drainage channel (low flow).	Metals, petroleum hydrocarbons and nutrients.	Soil, sediment and surface water
Mechanical servicing in Old Farm buildings.	Petroleum hydrocarbons, solvents and metals.	Soil
Possible workshop to the south of the Farm Managers residence.	Petroleum hydrocarbons, solvents and metals.	Soil
Use of creosote in Old Farm building.	Phenolics, polyaromatic hydrocarbons and petroleum hydrocarbons.	Soil and groundwater
Laboratories in Old Farm buildings.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Waste burial in east of zone.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, asbestos, inert wastes, possible biological and radiological hazard.	Soil and groundwater
Former incinerator in the area of the former glasshouses.	Metals and polyaromatic hydrocarbons.	Soil
Possible historic effluent irrigation.	Metals, nutrients, pH.	Soil and groundwater
Electrical transformer north of Old Farm (small and pole mounted).	PCBs, petroleum hydrocarbons.	Soil
Carcass burial in area of Student Residences.	Metals, polyaromatic hydrocarbons, possible biological and radiological hazard.	Soil and groundwater
Possible septic tanks in the area of the former residential dwellings, men's quarters and farm managers house.	Metals, petroleum hydrocarbons, solvents, nutrients, altered pH.	Soil and groundwater
Historic building demolition.	Building rubble, metals, petroleum hydrocarbons, asbestos.	Soil
Evidence of fire and burning off in east of the zone.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons.	Soil
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater

Table 34 Potential On-Site Contamination Issues - Zone B

Observation and/or Activity	Main Potential Contaminants	Medium
Storage of fuel or oil: ❒ UST located at the furnace room of the Gilbert Chandler building. ❒ 200 L drums at Food Science building and Old Dairy compound. ❒ Possible other areas historically, such as area of former residential dwellings (mentioned by DPI to have a mechanic and service station).	Petroleum hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Stockpiles of soil and rubble north of Wilson Avenue (~150 m3 and 50 m3). ❒ Former location of residential buildings along Wilson and Richardson. ❒ Soil mounds, channels and levees for flood irrigation. ❒ Possibly other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil
Sump and waste pits to the east of the Old Dairy compound.	Metals, petroleum hydrocarbons, cleaning agents such as solvents.	Soil and groundwater
Trade waste pits at the Gilbert Chandler and Food Science buildings.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Laboratory and photo sinks and possible waste acid discharge points in the Food Pilot building.	Various chemicals including metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Portable grease trap formerly used at Gilbert Chandler building.	Metals, petroleum hydrocarbons, phenolics and solvents.	Soil and groundwater
Possible mechanical workshop in the Vegetable Growers Association compound.	Petroleum hydrocarbons, solvents and metals.	Soil and groundwater
Chemical storage shed at the Gilbert Chandler building, associated with laboratory use.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Storage and use of machinery.	Petroleum, solvents and metals.	Soil and groundwater
Use of chemicals at Food Science Australia and Vegetable Growers Association.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Possible historic effluent irrigation.	Metals, nutrients and pH.	Soil and groundwater
Possible septic tanks in area of former residential dwellings.	Metals, petroleum hydrocarbons, solvents, nutrients, pH.	Soil and groundwater
Historic building demolition.	Building rubble, metals, petroleum hydrocarbons, asbestos.	Soil
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater

Table 35 Potential On-Site Contamination Issues - Zone C

Observation and/or Activity	Main Potential Contaminants	Medium
Storage of fuel or oil: ❒ Heating oil tank understood to be present. ❒ Possible other areas historically.	Petroleum hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Stockpiles of soil, sourced from Melbourne University Parkville Campus. ❒ Soil mounds, channels and levees for flood irrigation. ❒ Stable waste dumped to the south of the dam. ❒ Possibly other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil and groundwater
Grease trap.	Metals, petroleum hydrocarbons, phenolics and solvents.	Soil and groundwater
Trade waste pits (3) and straining pit.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Herbicide use.	Herbicides.	Soil
Baiting of rabbits.	Various including possibly 1080 and Pindone.	Soil
Workshop, concrete floor only constructed 3 years ago.	Petroleum hydrocarbons, solvents and metals.	Soil and groundwater
Incinerator present for cremation of animals.	Metals and polyaromatic hydrocarbons.	Soil
Use of chemicals in laboratory.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Possible historic effluent irrigation.	Metals, nutrients, pH.	Soil and groundwater
Plant room present.	Petroleum hydrocarbons (total petroleum hydrocarbons and monoaromatic hydrocarbons), solvents and metals.	Soil and groundwater
Historic building demolition.	Building rubble, metals, petroleum hydrocarbons, synthetic mineral fibre (asbestos).	Soil
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater
Syringes found in car park area.	Biological hazard and aesthetic issue.	Soil
Radioactive cancer ward.	Possible radiological hazard.	Soil and groundwater

Table 36 Potential On-Site Contamination Issues - Zone D

Observation and/or Activity	Main Potential Contaminants	Medium
Storage of fuel or oil: ❒ Petrol powered silo filler. ❒ 200 L drums at shearing shed. ❒ Possible other areas historically.	Petroleum hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Tractor testing track (which has been relocated historically). ❒ Rubbish tip to the south of the tractor testing track (rubble, possible asbestos visible). ❒ Large stockpile (~2,000 m3) to the east of the tractor testing track (contains rubble). ❒ Stockpiles of soil and effluent north of the piggery. ❒ Possibly other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil
Bare earth floors in animal pens.	Metals, nutrients, pH.	Soil
Drainage channel (low flow).	Metals, petroleum hydrocarbons and nutrients.	Soil, sediment and surface water
Effluent sumps in the piggery.	Metals, petroleum hydrocarbons, cleaning agents such as solvents.	Soil and groundwater
Sheep dip to the west of the shearing shed.	Metals (arsenic), organochlorine and organophosphate pesticides, synthetic pyrethroids and insecticides.	Soil and groundwater
Mechanical repairs in the New Farm compound.	Petroleum hydrocarbons, solvents and metals.	Soil and groundwater
Burial area north of the piggery.	Metals, polyaromatic hydrocarbons, possible biological and radiological hazard.	Soil and groundwater
Burial of carcasses to the north east of the piggery (some having had radioactive tracer dye injection).	Metals, polyaromatic hydrocarbons, possible biological and radiological hazard.	Soil and groundwater
Chemical store in poultry facility (class 6 poisons).	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Storage of chemicals and herbicides in New Farm compound (herbicides and pesticides /insecticides).	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Incinerator north of the piggery.	Metals and polyaromatic hydrocarbons.	Soil
Staining beneath wool press in shearing shed.	Petroleum hydrocarbons.	Soil
Historic building demolition.	Building rubble, metals, petroleum hydrocarbons, asbestos.	Soil
Possible historic effluent irrigation.	Metals, nutrients, pH.	Soil and groundwater
Use of fertilizers.	Metals, sulphate, pH.	Soil and groundwater
Effluent disposal on bare earth adjacent to dog kennels.	Metals, nutrients, pH.	Soil and groundwater

Table 37 Potential On-Site Contamination Issues - Zone E

Observation and/or Activity	Main Potential Contaminants	Medium
Storage of fuel or oil: ❒ Above ground heating oil tank at the Farm Research shed (associated with heating oil powered furnace in same area). ❒ Diesel powered generator south of KRC Repository building (fuel expected to be stored in generator housing, not underground). ❒ Proposed underground oil storage tank south of State Chemistry Laboratory. ❒ 200 L drum marked “waste oil” in the ammonia refrigeration room in the Meat Research Centre. ❒ 200 L drum of diesel for supply to tractor within the CSIRO Animal Health Science Centre. ❒ Possible other areas historically.	Petroleum hydrocarbons, polyaromatic hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Stockpiled soil along the alignment of the Melbourne Water Trunk Sewer. ❒ Soil stockpiles in the centre of the zone (30 m3 and 12 m3). ❒ Fill material north of Sheep Yard E17. ❒ Stockpiles of seed husks and manure in the east of the zone. ❒ Possibly other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil
Abattoir in Meat Research Centre, including subfloor drains and sumps.	Metals, petroleum hydrocarbons, cleaning agents such as solvents and chlorinated solvents, nutrients and pH.	Soil and groundwater
Storage and use of chemicals at the State Chemistry Laboratory.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Burial of rubbish to the south east of the State Chemistry Laboratory, within the eastern area of the car park.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil and groundwater
Incinerator at CSIRO Animal Health Science Centre.	Metals and polyaromatic hydrocarbons.	Soil
Wash room and Autopsy room at the CSIRO Animal Health Science Centre.	Metals, petroleum hydrocarbons, cleaning agents such as solvents and chlorinated solvents.	Soil and groundwater
Retention ponds for capture of stormwater runoff at the CSIRO Animal Health Science Centre.	Metals, petroleum hydrocarbons, nutrients, pH.	Soil and groundwater
Maintenance shed at the CSIRO Animal Health Science Centre.	Petroleum hydrocarbons, polyaromatic hydrocarbons, solvents and metals.	Soil and groundwater
Incinerator room in former SS Cameron Animal Research Laboratory (current location of State Chemistry Laboratory).	Metals and polyaromatic hydrocarbons.	Soil
Workshop south of the former SS Cameron	Petroleum hydrocarbons, solvents and metals.	Soil and groundwater

Animal Research Laboratory.		
Burial of animal carcasses in the south of the zone. Some pits were currently open, with carcasses, 20 L chemical drums, wire and bailing twine being buried.	Metals, polyaromatic hydrocarbons, possible biological and radiological hazard.	Soil and groundwater
Drainage channel (low flow).	Metals, petroleum hydrocarbons and nutrients.	Soil, sediment and surface water
Drainage channel and holding dam to the east of the Farm 1 Feed building.	Metals, petroleum hydrocarbons, nutrients, pH.	Soil, sediment and surface water
Silt pit, pump well and macerator at the former PHIMR Animal house, located in area currently occupied by the Meat Research and Training Centre.	Metals, petroleum hydrocarbons, cleaning agents such as solvents and chlorinated solvents.	Soil and groundwater
Laboratory inside former PHIMR Animal House, containing neutralising pit and grease interceptor trap.	Various chemicals including organochlorine and organophosphate pesticides, phenolics, herbicides, metals, solvents, chlorinated solvents, acids, etc.	Soil and groundwater
Historic building demolition (eg: unknown former structure north of Farm Research Shed).	Building rubble, metals, petroleum hydrocarbons, asbestos.	Soil
Possible historic effluent irrigation.	Metals, nutrients, pH.	Soil and groundwater
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater
Biological waste in the yard of the Meat Research Centre.	Biological hazard	Soil
Radiation restricted zone to the east of the Meat Research Centre (locked building).	Radiological hazard	Soil

Table 38 Potential On-Site Contamination Issues - Zone F

Observation and/or Activity	Main Potential Contaminants	Medium
Possible historic effluent irrigation.	Metals, nutrients, nitrate, altered pH.	Soil and groundwater
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater
Possible railway use in the northern part of the zone in the early 1900s.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, phenolics.	Soil
Filling of soils: ❒ Backfilled dam in the west of the northern part of the zone.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil

Table 39 Potential On-Site Contamination Issues - Zone G

Observation and/or Activity	Main Potential Contaminants	Medium
Possible historic effluent irrigation.	Metals, nutrients, nitrate, altered pH.	Soil and groundwater
Dam in the east part of the zone	Metals, nutrients, pH.	Soil
Use of fertilizers.	Metals, sulphate, nutrients, pH.	Soil and groundwater
WAG high pressure oil pipeline running through the south east of the zone.	Petroleum hydrocarbons	Soil and groundwater
Filling of soils in the south of the zone (area of approximately 25m2).	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and aesthetic issues.	Soil
Fire area with evidence of ash and bones (~12m2).	Metals, polyaromatic hydrocarbons	Soil

Table 40 Potential On-Site Contamination Issues - Zone H

Observation and/or Activity	Main Potential Contaminants	Medium
Possible storage of fuel or oil within site sheds.	Petroleum hydrocarbons and lead.	Soil and groundwater
Filling of soils: ❒ Dam E05 where earthworks were being conducted at the time of inspection. ❒ Sheep Yard E07 with evidence of assorted rubble including timber, glass, metal and plastic. ❒ Soil stockpile (~20 m3) to the north of Sheep Yard E06. ❒ Large stockpile of soil along the southern boundary of the zone (600 m x 2 m x 8-10 m wide). ❒ Possibly other areas historically.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and inert wastes.	Soil
WAG high pressure oil pipeline running along the north west boundary of the zone.	Petroleum hydrocarbons	Soil and groundwater
Sheep dosing station (above ground) with associated underground sump.	Metals (arsenic), organochlorine and organophosphate pesticides, synthetic pyrethroids and insecticides.	Soil and groundwater
Timber yard to the east of Sheep Yard E07 (central west of the zone).	Metals (timber preservatives), phenolics and petroleum hydrocarbons.	Soil and groundwater
Waste disposal in the following areas: ❒ Animal bones, metal, polystyrene and unknown chemical containers in Sheep Yard E07. ❒ Empty oil drum at Dam E06. ❒ Empty herbicide drum at Cattle Yard E11. ❒ Empty branding fluid drum at Sheep Yard E10.	Metals, polyaromatic hydrocarbons, petroleum hydrocarbons, organochlorine and organophosphate pesticides, phenolics, herbicides, asbestos and aesthetic issue.	Soil and groundwater
Metal waste around Sheep Yard E06.	Metals and aesthetic issue.	Soil
Syringes and biological hazard container on ground in Cattle Yard E11.	Biological hazard and aesthetic issue.	Soil
Lead shot below fence post in Farm Shed E14.	Lead.	Soil
Drainage channel (low flow).	Metals, petroleum hydrocarbons and nutrients.	Soil, sediment and surface water
Possible historic effluent irrigation.	Metals, nutrients, pH.	Soil and groundwater
Use of fertilizers.	Metals, sulphate, altered pH.	Soil and groundwater

7.2 Off-site

A number of potential sources of contamination were identified in the vicinity of the site. These included:

- Service station to the north of the site.
- Market gardens to the west and south of the site, both historically and current.
- Possible storage of fuels at the Werribee Mercy Hospital.
- Possible storage of fuels at the Victoria University of Technology on Hoppers Lane. The site was used in part for earthmoving training.
- Melbourne Water Hoppers Crossing Pumping Station.

These sources were considered to pose relatively low risk to the site.

8 Recommendations

Based on the results of Phase 1 Environmental Site Assessment, Compass Environmental makes the following recommendations:

- Compile all information regarding the location of the identified potential sources of contamination on a current feature survey plan.

- Undertake a Phase 2 Environmental Site Assessment including soil and groundwater investigation using methodology consistent with Australian Standard AS4482.1-2005, the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 1999) and relevant Victorian EPA guidelines. As a minimum the assessment should target the identified potential sources of contamination to provide an indication of the contamination status of each parcel of land. The objectives of each stage of the assessment should be clearly defined to ensure that the interests of all parties involved are adequately addressed.

- Conduct a further detailed review of the following:
  - All DPI records/maps stored in the records room located at 600 Sneydes Road.
  - Any archived records kept by the local Council. This will require a written consent from the site owner/occupier.
  - Trade waste documents. This will require a written consent from the site owner/occupier.

- Conduct a hazardous materials audit of the existing buildings to determine the type and location of any hazardous materials in the form of asbestos containing materials and synthetic mineral fibre products, and the possible presence of lead based paints and PCBs in light fittings.

9 References

Sands 2001. Assessment of Significance. Former State Research Farm Buildings, Sneydes Road Werribee. Robert Sands Pty Ltd 2001.

Ken James & Lance Pritchard 2008 Werribee The First 100 Years, Werribee District Historical Society Inc. 2008.

National Environment Protection Council (NEPC) 1999. National Environment Protection (Assessment of Site Contamination) Measure (NEPM).

Standards Australia 2005. Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-Volatile and Semi-Volatile Compounds AS 4482.2.

10 Limitations

Compass Environmental has conducted this assessment in accordance with the scope of work and for the purpose outlined in the proposal dated 5 January 2009. The services performed by Compass Environmental have been conducted in a manner consistent with the level of quality and skill generally exercised by the consulting profession.

This report is based on the conditions encountered and data reviewed between 28 January 2009 and 22 March 2009. Compass Environmental assumes no responsibility for any changes that may have occurred after this time. The methodologies and sources of information used by Compass Environmental are outlined in the report. Compass Environmental has made no independent verification of this information beyond the agreed scope of work and assumes no responsibility for any inaccuracies or omissions.

This report has been prepared for the use of VicUrban and may not contain sufficient information for purposes of other parties or users. Any reliance on this report by a third party shall be at its sole risk.

This report should be read in full and may be not used to support any other objectives than those set out in the report.