Geotechnical and Preliminary Environmental Contamination Assessment

Precinct Structure Plan No. 09 Berwick Waterways

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Prepared for

Growth Areas Authority

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Executive Summary

AECOM Australia Pty Ltd (AECOM) was engaged by Growth Areas Authority (GAA) to provide advice on geotechnical and preliminary environmental contamination assessment at Precinct Structure Plan (PSP) No. 09 Berwick Waterways. The Site is approximately 83 hectares in area and is located at 187 Golf Links Road, 322-364 Centre Road, 335-375 Centre Road, 94-138 Homestead Road, 101-137 Homestead Road and 1 Ward Road, Berwick. This report presents the results of the works undertaken by AECOM, including a preliminary desktop review and Site history investigation, Site inspection and a subsurface soil and groundwater investigation.

The Site has been identified for urban growth but to date has not been rezoned for development purposes due to complex ownership (*i.e.* the existence of multiple land titles) and stormwater drainage issues. To resolve the drainage issues, redevelopment would require excavation and construction of a wetland to carry stormwater and to act as a retarding basin. GAA is investigating the feasibility of using the soil excavated from the proposed wetland as fill in the areas proposed for residential development.

It is understood that GAA will use AECOM's report, together with the reports from other consultants, to identify opportunities and/or constraints associated with the proposed development and will incorporate these into the conceptual design for the wetlands and overall subdivision.

AECOM understands that the overall objective of the geotechnical and preliminary environmental contamination assessment is to:

- assess past land uses, and surface and sub-surface conditions, in order to identify opportunities and/or constraints associated with geotechnical or chemical characteristics of soil and/or groundwater that may affect the proposed wetland design and the proposed development of the Site for low density residential use.

It is understood that an Environmental Auditor (appointed pursuant to Section 53 of the Environment Protection Act 1970) has not been engaged by GAA for the Site at the time of this report. This report is not intended to meet (on its own) the requirements of a statutory Environmental Audit, should it be required.

Works undertaken as part of the geotechnical and preliminary environmental contamination assessment were divided into stages defined by GAA. The scope of work included:

- A desktop review of readily available information related to the Site's history and environmental setting to identify current and previous land uses and potentially contaminating activities.
- A Site walkover inspection to observe current land uses, surface topography and geology, and to identify areas and activities that could indicate potential contamination.
- Field works, including
  - Targeted geotechnical and environmental soil investigation, consisting of excavation of test pits and collection of soil samples at 35 locations for laboratory analysis. The soil investigation included a preliminary acid sulphate soils (ASS) assessment.
  - Installation of three groundwater monitoring wells and collection of samples from each well.
  - Preparation of this report (a draft version of this report was submitted to GAA for comment on 29 July 2010). The results of the geotechnical component of the soil investigation are presented separately as an appendix to this report (Appendix A) and are summarised in Section 8.4.
- Participation in a Staging and Strategy Workshop on 4 September 2010. The workshop was facilitated by GAA and was attended by City of Casey, Taylors Development Strategists, GTA Consultants, Don Stizza and Associates, Stormy Water Solutions, Charter Keck Cramer and AECOM. At the workshop, the initial draft strategy for the Site was discussed and AECOM presented the preliminary findings of the geotechnical and preliminary environmental contamination assessment as documented in the draft report.

Based on the results of the Preliminary Desktop Review and Targeted Geotechnical and Environmental Soil Assessment, the following conclusions are made:

Desktop Assessment

- The following potential contaminating activities and contaminants of potential concern were identified:
  - Storage and use of pesticides (particularly OCPs) associated with agricultural and horticultural activities.
  - Importation of potentially contaminated fill (metals, TPH, PAHs)
  - Livestock burials (nitrate, ammonia, biological hazards)
  - Waste burials, including potential burial of hazardous materials such as asbestos.
  - Septic tanks (nitrate, ammonia, biological hazards)
- Stockpiled fill with various building rubble such as concrete, bricks, timber and plastic was observed on Lots 11, 20, 25 and 27. This is considered potentially detrimental to the aesthetics beneficial use at the Site.
- AECOM did not have access permission for all 29 lots at the time of this assessment. As a result, it was not possible to undertake a full review of Site use and history, which would normally include a Site inspection and interview with Site users. In particular, nursery businesses at lots 15 and 19 were not inspected and may warrant further investigation.

Soil Contamination Assessment

- No elevated PID readings or olfactory/visual observations that may have indicated the presence of contamination were recorded during the soil sampling program.
- The analysed soil samples reported concentrations below the adopted human health and ecosystems beneficial use objectives for the chemicals analysed. The following limitations should be noted with respect to soil analytical results:
  - AECOM was appointed by GAA to obtain samples from 18 targeted locations, which is less than the number of sampling locations recommended in AS4482-1 (2005) for a site of approximately 83 ha. However, based on information provided by GAA, obtained by AECOM during the desktop assessment and that observed during the Site walkover, the sampling locations targeted likely areas of potential impact to near surface soils on properties where AECOM was granted access permission.
  - AECOM collected a total of 10 samples from selected stockpiles, which is less than the number of samples specified in EPA Victoria Publication 702. Further stockpile classification would be required prior to off-Site disposal.

Acid Sulphate Soils

- Field pH testing indicated that PASS may be present in six of the eight samples analysed. Therefore should clay soil at the Site be disturbed or exposed by excavation or construction activity, there is the potential that acid may be generated.
- SCR and SPOCAS analysis reported an average net acidity of 0.06 %S in seven samples analysed. In accordance with EPA Victoria Publication 655.1, it is concluded that the soils represented by the analysed samples have the potential to generate acid. In addition, the average net acidity is above the net acidity criteria specified in QNRM (2002) of 0.03 %S for heavy clays and silty clays > 1000 tonnes. Therefore the material represented by AECOM's samples is classified as ASS. The following limitations should be noted with respect to ASS analytical results:
  - Where potential acidity was reported below the laboratory detection limit it was conservatively assumed that the potential acidity of the sample was equal to the detection limit for the purposes of calculating net acidity. This conservatism is carried through the acidity calculations and therefore the average net acidity of 0.06 %S is considered to be a conservative estimate.
  - It should also be noted that the total number of samples analysed is less that that specified in Table 1 of EPA Victoria Publication 655.1 (i.e. 2 boreholes per ha for sites larger than 4 ha, equivalent to 166 samples for an 83 ha site). In addition, limited vertical sampling coverage has been achieved by the sampling undertaken to date. Therefore further investigation may reduce the total volume of soil requiring treatment.
- Based on the "Theme 2 Wetland Fingers to Reduce Fill" Drainage Plan provided by GAA, approximately 170 000 m3 (in-situ) of soil may be disturbed as part of wetland construction. Based on an assumed average

bulk density of 1.8 for clay, up to 306 000 tonnes of ASS may need to be treated to ensure neutralisation. This assumes that all soil requiring disturbance at the Site is classified as ASS.

- The calculated liming rate required to neutralise 306 000 tonnes of ASS at the Site is 2.8 kg per tonne. Applying this rate to the entire soil mass, approximately 850 tonnes of lime would be required to neutralise all ASS at the Site. However, it is noted that liming rates are calculated on a dry mass basis and therefore the mass of soil used in this calculation is a conservative estimate, and less lime is likely to be required in practice.
- The risk category associated with ASS at the Site can be defined as Extra High Treatment (category XH) in accordance with DNRM (2002).

Geotechnical Investigation

The conclusions of the geotechnical investigation are summarised below. They should be read in conjunction with the full geotechnical report in **Appendix A**.

- pH in soil samples ranged from 5.2-7.2 and sulphate ranged from 60-270 mg/kg. Based on these results, soil is considered to be "non-aggressive" in accordance with AS 2159-2009 Piling - Design and Installation. However, results of the ASS investigation should be taken into account when designing concrete footings and subsurface structures.
- Laboratory Californian Bearing Ration (CBR) testing undertaken on the clay residual soils resulted in CBR values of 3.5% and 6.0%.
- CBR tests undertaken indicated the optimum moisture content (OMC) of the residual clay soils to be approximately 24% to 29%. Moisture content tests on samples across the site gave a range of field moisture contents between 18% and 38%, suggesting that at the time of the fieldwork the residual soils had a natural moisture content varying from lower to higher than the OMC.
- Excavations for shallow footings and pipeline trenches are likely to comprise predominately alluvial clay soils.
- Atterberg Limit tests undertaken on clay soils at site indicate a Plasticity Index (PI) ranging between 63% and 76%. PI values of this range are typically characteristic of highly reactive soils.
- Due to the low strength and high reactivity of soils it is unlikely that shallow pad or strip footings would be suitable. It is anticipated that a stiffened raft will be suitable for structures at the Site.
- The results of the dispersion testing indicated that the material is typically non-dispersive (Emerson Class 6 to 8), although one test result returned as highly dispersive (Emerson Class 2).

Groundwater Investigation

- Groundwater was encountered within brown clay at approximately 8-9 m bgl in MW01 and MW03 and at approximately 5.5 m bgl in MW02. In all wells, groundwater stabilised at a higher elevation, indicating that groundwater at the Site may be semi-confined.
- Based on the measured standing water levels, groundwater was inferred to flow to the north west. This groundwater flow direction is based on the assumption that the groundwater head in MW03 is equal to the top of casing elevation, and does not take into account the potential presence vertical groundwater gradients.
- No odours or other evidence of contamination (e.g. sheen) were noted during well installation and groundwater sampling.
- Laboratory-measured TDS ranged from 4 000 - 4 500 mg/L. Based on the laboratory analysed TDS, groundwater at the Site is considered to fall within Segment C, in accordance with the SEPP (GoV).
- Groundwater samples recorded concentrations of analysed chemicals below the adopted groundwater quality objectives with the exception of individual metals (copper, manganese, nickel, zinc) and nitrate.
    - Copper, nickel and zinc are considered to be consistent with regional/background concentrations and therefore are not considered to represent pollution.
    - Manganese exceeds the ADWG drinking water aesthetic value only and is therefore not considered to preclude the primary contact recreation beneficial use.
    - The nitrate concentration at MW02 (12 mg/L) is above the guideline value of 10 mg/L for the primary contact recreation beneficial use. It is noted that nitrate was not reported in elevated concentrations in the inferred downgradient well (MW01) and that attenuation is likely to be occurring. Further evaluation

of nitrate concentrations in groundwater around MW02 may be required depending upon the likelihood that the primary contact recreational use will actually be realised on Site.

Based on the conclusions of the Preliminary Desktop Review and Targeted Geotechnical and Environmental Soil Assessment, the following recommendations are made:

Desktop Assessment

- It is recommended that, prior to finalisation of the PSP, further investigation is undertaken at nursery businesses at lots 15 and 19, which were not inspected as part of this investigation, with a focus on potentially contaminating activities,.
- In accordance with Minister's Direction No. 1, horticultural land use is not specifically defined as "potentially contaminated land". Therefore an Environmental Audit, in accordance with Part 9D of the Environment Protection Act (1970) may not be required. However, given that it is unknown whether chemical storage or waste disposal has historically occurred at these lots, further environmental investigation to assess the suitability of the Site for the proposed use is recommended prior to a sensitive use commencing at these lots.

Soil Contamination Assessment

- Stockpiled building rubble on Lot 27 and anthropogenic material within stockpiled soil on other lots should be removed from the Site.
- Further stockpile sampling in accordance with EPA Publication 702 should be undertaken to assess whether soil stockpiles on Lots 11, 20, 25 and 27 (and other stockpiles if discovered) are suitable to remain on-Site. If stockpiles are to be reused on-Site, all anthropogenic material should be separated from the stockpiles and disposed of appropriately. In the event that stockpiled soil is removed from the Site, transport and disposal should be undertaken in accordance with EPA Publication 621 and EPA waste transport protocols.
- Further environmental investigation, including Site inspection and soil sampling, should be undertaken on Lots 15 and 19, which are currently occupied by nursery businesses, prior to determination of their suitability for residential land use. The requirements of Minister's Direction No. 1 (Potentially Contaminated Land) will need to be taken into account for Lots 15 and 19 with respect to the change to a more sensitive land use, including the potential need for an environmental audit to be undertaken either before an amendment to the planning scheme to allow a sensitive land use, or before a sensitive land use commences.
- Septic tanks should be emptied, decommissioned and removed where possible as part of the redevelopment works.

Acid Sulphate Soil Assessment

- Further ASS sampling should be undertaken to support the existing results and to reduce uncertainty regarding the volume of ASS at the Site. ASS sampling should be undertaken in accordance with Victorian EPA Publication 655.1.
- It is recommended that, in accordance with EPA Publication 655.1, prior to earthworks commencing, the proposed works are discussed with EPA before an Environmental Management Plan (EMP) is prepared and submitted to EPA for approval. The EMP would take into consideration the management strategy and monitoring requirements to ensure that the proposed treatment will not impact on land, surface water and groundwater. In particular, the disturbance should be staged so that the potential effects on any one area are limited and more easily managed. The EMP should include details pertaining to the management of potential acid sulphate soils contacted during the earthworks.
- The following should be taken into consideration when designing the wetland:
    - While disturbed or exposed clay soil at the Site has the potential to generate acid, it should be noted that in areas of the wetland designed to be continually submerged, the natural clay material would not be expected to be exposed to oxygen and therefore acid is unlikely to be generated.
    - In areas of the wetland not designed to be continually submerged, or areas where incidental exposure of the soil to oxygen may occur, treatment and/or management may be required. This could include lime mixing as described in Section 10.1.3, or the installation of an engineered capping layer to minimise exposure to oxygen. It is noted that wetlands located to the south of the Site are likely to have been constructed in similar geology with similar acid sulphate generating potential. Consideration

of operating experience with the existing wetlands should be taken into account when developing the management plan for the potential acid sulphate soils.

Geotechnical Investigation

The recommendations of the geotechnical investigation are summarised below. They should be read in conjunction with the full geotechnical report in **Appendix A**. At the time of this investigation the information provided to AECOM regarding the configuration and design details of the wetland and proposed residential development was limited and, as such, the following recommendations are general in nature. Requirements for additional geotechnical site investigation and the recommendations given below should be reviewed following finalisation of the proposed development design.

Excavation Conditions

- Standard excavation equipment, such as a back hoe or excavator, should be suitable for excavation of shallow alluvial soils.

Slopes and Retaining Structures

- Assuming that the majority of excavations at the Site will be temporary (short term) excavations such as those for shallow spread/raft footings or buried services, trench excavations deeper than 1.2m or otherwise containing very soft/soft, loose, wet or unstable materials should be battered, benched or have appropriate shoring provided.
- Temporary batter slopes may be used for shallow excavations at the Site. A maximum slope grade of 1H:1V is recommended for temporary excavations, up to a depth of 3 m, within the firm to stiff alluvial clay soils.
- Construction of any unsupported temporary slope greater than 3 m in height will need to be assessed by a geotechnical engineer on a case by case basis. Where battered slopes are not practical, temporary support such as shoring or trench shields may be suitable. Further advice should be sought, once excavation details and methods have been finalised, should these be required.
- If permanent cut slopes or excavations are required they should be adequately battered or retained. Batters for permanent excavations up to 3 m in height/depth should not exceed 3H:1V in the firm to stiff alluvial clay soils.
- If permanent retaining structures are required design will need to be carried out by a suitably qualified engineer.

AS270 Site Classification

- Based on the high PI results and the Site Classification recommendations for an 'Alluvial Clay Soil' in Table D1, Australian Standard AS2870-1996 "Residential Slabs and Footings - Construction", it is recommended that the Site is classified as Class 'H'.
- Following finalisation of the design and layout it is recommend that further investigation and testing is undertaken to confirm this classification.
- Engineered filling of the site with inert (non-reactive) fill materials to depths greater than 0.8m may reduce the Site Classification.
- Site classification is based on the Site conditions at the time of investigation. Site classification may need to be reconsidered if significant (i.e. >0.4m) of filling is carried out on-Site.

Soft Landscaping

- Soft landscaping should take into consideration the effects of new tree plantings and vegetation removal on proposed and existing structures. In particular, tree planting should be restricted to a distance greater than the mature height of the trees away from the existing or proposed structures.

Building Footings

- At the time of this investigation the form of the proposed structures for the development were not known. However, due to the high reactivity of soils it is unlikely that shallow pad or strip footings would be suitable. It is anticipated that a stiffened raft will be suitable for structures at the Site.
- Based on the results of the field investigation and assuming the proposed structures are low level buildings, founding on the clay soils with stiff or better consistency, an allowable bearing pressure of 100kPa may be adopted.
- Footing excavations should be inspected by a geotechnical engineer during construction to ensure that foundation conditions are consistent with those on which design recommendations are based.
- Because of the high reactivity of soils at the Site, service trenches beneath footings should be minimised and where used should be backfilled with compacted low permeability material to reduce water migration and ponding. All surface water should be controlled and diverted away from buildings.
- It is not expected that pile footings will be an economical solution for the low-rise residential structures anticipated for the site. However, it is understood that forms of commercial structures may be proposed for the Site and, depending on the loading conditions, a piled solution may be appropriate. Heavily loaded structures will likely need to be founded on piles that extend into the underlying Silurian rock (or other suitable material). Should pile footings be considered, additional geotechnical investigation and advice will be required.

Reuse of Site Material as General Fill

- The alluvial clay materials present at the Site may be used as general fill in areas that are not settlement sensitive only. Due to the moisture sensitivity, the untreated alluvial clay materials are generally considered unsuitable for use as engineered fill. However, the alluvial clay may be treated by addition of lime to reduce moisture sensitivity, reactivity and thereby improve the suitability of the soils for use as both general and engineered fill. Alternatively, structures and pavements may be designed to account for the moisture sensitivity of the untreated alluvial clay, although this is unlikely to be an economical solution.
- If soils on-Site already require treatment with lime due to the PASS (refer Section 10.1.3), a cost effective solution may be to ensure that the liming volumes are sufficient to both mitigate PASS and reduce moisture sensitivity. If liming rates are adequate, excavated alluvial clay materials could be used at the Site as engineered fill.
- The soil liming rate and volume should be determined in accordance with VicRoads Code of Practice RC500.23 and Specification 290. Typically lime volumes to adequately reduce moisture sensitivity are between 3 and 5%. A possible construction sequence for areas of lime treated alluvial clay fill is as follows:
    1) Strip topsoil and unsuitable materials off fill areas and proof roll.
    2) Progressively excavate waterway.
    3) Spread single layer of excavated material (up to 300mm thick) across areas of fill.
    4) Mix lime into layer using appropriate plant and/or equipment.
    5) Compact treated layer and repeat steps 3 to 5 until necessary level is achieved.

    The impact of increased lime concentrations in the surficial soils on future landscaping works, flora and fauna may need to be considered.

Suitability of Site Materials for Use as a Clay Liner for Wetlands

- Typically permeability of clay materials used in lagoon liners is approximately k=10-9 m/s. This is likely to be achievable with the alluvial high plasticity clay material at site (subject to testing). The in-situ permeability of the alluvial clays is also likely to be very low, although the presence of any minor silt/sand lenses or partings could locally increase this significantly. It is recommended that the subgrade of any clay liner be scarified, moisture conditioned and re-compacted before placing the liner.
- Some cracking of the clay liner is likely to occur on drying due to shrinkage of the high plasticity clays. This may be mitigated by providing surface cover, such as thick soil and topsoil cover (for example, 0.5m), to reduce evaporation and moisture change or by maintaining the wetlands in a wet condition, if required.
- While the results of the dispersion testing indicated that the material is typically non-dispersive, one test result returned as highly dispersive. Should the dispersivity of the clay soils be important to the operation of the wetlands, further dispersion testing should be undertaken. Lime may be used to reduce the dispersive characteristics.

- It should be noted that addition of lime to clay can increase the permeability and chemical properties (such as pH) of the soil. This should be considered during wetland and clay liner design if lime treated soils are to be incorporated

Pavement Design

- Based on the laboratory Californian Bearing Ratio testing undertaken on the clay residual soils, a CBR value of 3% may be adopted for pavement design.
- In accordance with VicRoads Code of Practice RC 500.22 the alluvial clay soils onsite are classified as expansive and as such will require a minimum cover to the top of pavement. Refer to VicRoads Code of Practice RC 500.22 Figure 5.1 for minimum cover requirements.

Subgrade Preparation

- Materials may require moisture conditioning during the subgrade preparation process.
- Although no information is available about the proposed development layout, the following general subgrade preparation procedures are recommended:
    - Areas on which fill is to be placed should be stripped of any topsoil materials and soils containing organic material including roots and stockpiled separately on site. Stripping depths are expected to range between approximately 50mm to 200mm.
    - Box out the subgrade, where required, to the specified design subgrade level and compact the subgrade material to a minimum dry density ratio of 98% Standard using a vibrating pad/sheep's foot roller of at least 10 tonnes static mass. The exposed subgrade should be moisture conditioned to within -3% to +1% of Optimum Moisture Content (OMC) and compacted over a depth of 300mm in accordance with AS3798 - 2007 section 5.2.
    - The prepared subgrade should be test rolled using suitable plant in accordance with AS3798 - 2007 section 5.5. Test rolling should be undertaken to ensure that the subgrade is capable of withstanding the applied loading without visible deformation or springing. Test rolling should be undertaken in the presence of a suitably qualified geotechnical engineer. If soft areas are identified during test rolling the areas should be removed and replaced with suitable select fill and re-compacted. The select fill should be placed in horizontal layers no greater than 200mm loose thickness.

- Where lime stabilisation is utilised to improve the acceptable design CBR value compaction of the subgrade is to be undertaken following the lime mixing process. Test rolling is still required following lime stabilisation.
- Where a capping layer is utilised to improve the acceptable design CBR value the fill material should be placed in horizontal layers no greater than 200mm loose thickness. Test rolling is required following placement of the capping layer.
- It is recommended that the subgrade preparation should be carried out during dry weather conditions wherever possible. Provision for the effective drainage of surface water from the subgrade should be made by means such as temporary drains or pumping equipment.
- It is recommended that subgrade preparation and earthworks at proposed building locations should be carried out under Level 1 supervision as defined in AS3798 - 2003.

Groundwater Assessment

- Further assessment of groundwater in the vicinity of MW02 may be required to assess whether the primary contact recreation beneficial use is precluded by nitrate in this area.

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1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Growth Areas Authority (GAA) to provide advice on geotechnical and preliminary environmental contamination assessment at Precinct Structure Plan (PSP) No. 09 Berwick Waterways. The Site is located at 187 Golf Links Road, 322-364 Centre Road, 335-375 Centre Road, 94-138 Homestead Road, 101-137 Homestead Road and 1 Ward Road, Berwick (refer to **Figure F1**). This report presents the results of the works undertaken by AECOM, including a preliminary desktop review and Site history investigation, Site inspection and a subsurface soil and groundwater investigation.

1.1 Background

Based on information provided by GAA, the following is understood:

- The Site area is approximately 83 hectares and consists of 29 separate properties.
- The Site has been identified for urban growth but to date has not been rezoned for development purposes due to complex ownership (*i.e.* the existence of multiple land titles) and stormwater drainage issues. To resolve the drainage issues, redevelopment would require excavation and construction of a wetland to carry stormwater and to act as a retarding basin.
- GAA is investigating the feasibility of using the soil excavated from the proposed wetland as fill in the areas proposed for residential development. Therefore an assessment of the suitability of the soil for use as building footings and wetland construction is required. An assessment of the chemical quality of soil is also required to assess the suitability of soil at the Site for the proposed residential land use.
- Other consultants have been engaged to provide advice on other specific issues related to planning for the proposed development, including drainage, heritage and flora and fauna (including threatened species).
- GAA will use AECOM's report, together with the reports from the other consultants, to identify opportunities and/or constraints associated with the proposed development and will incorporate these into the conceptual design for the wetlands and overall subdivision. All consultants, along with GAA and the City of Casey, attended a workshop to discuss the implications of the preliminary findings of the various assessments on the proposed development.

1.2 Objective

AECOM understands that the overall objective of the geotechnical and preliminary environmental contamination assessment is to:

- assess past land uses, and surface and sub-surface conditions, in order to identify opportunities and/or constraints associated with geotechnical or chemical characteristics of soil and/or groundwater that may affect the proposed wetland design and the proposed development of the Site for low density residential use.

It is understood that an Environmental Auditor (appointed pursuant to Section 53 of the Environment Protection Act 1970) has not been engaged by GAA for the Site at the time of this report. This report is not intended to meet (on its own) the requirements of a statutory Environmental Audit, should it be required.

1.3 Scope of Works

Works undertaken as part of the geotechnical and preliminary environmental contamination assessment were divided into stages defined by GAA. These included:

Stage 1

A desktop review of readily available information related to the Site's history and environmental setting to identify current and previous land uses and potentially contaminating activities.

Stage 2

A Site walkover inspection to observe current land uses, surface topography and geology, and to identify areas and activities that could indicate potential contamination.

Stage 3

- Targeted geotechnical and environmental soil investigation, consisting of excavation of test pits and collection of soil samples at 35 locations for laboratory analysis. The soil investigation included a preliminary acid sulphate soils (ASS) assessment.
- Installation of three groundwater monitoring wells and collection of samples from each well.
- Preparation of this report (a draft version of this report was submitted to GAA for comment on 29 July 2010). The results of the geotechnical component of the soil investigation are presented separately as an appendix to this report **(Appendix A)** and are summarised in **Section 8.3**.

Stage 4

- Participation in a Staging and Strategy Workshop on 4 September 2010. The workshop was facilitated by GAA and was attended by City of Casey, Taylors Development Strategists, GTA Consultants, Don Stizza and Associates, Stormy Water Solutions, Charter Keck Cramer and AECOM. At the workshop, the initial draft strategy for the Site was discussed and AECOM presented the preliminary findings of the geotechnical and preliminary environmental contamination assessment as documented in the draft report.

2.0 Site Description and Environmental Setting

2.1 Site Details

The following table summarises the relevant details that describe the Site.

Table 1: Site Details

Item	Details
Site Address	187 Golf Links Road, 322-364 Centre Road, 335-375 Centre Road, 94-138 Homestead Road, 101-137 Homestead Road and 1 Ward Road, Berwick. The Site is bound by the Berwick town drain to the west, Greaves Road to the south, and by residential properties to the east and north.
Site Locality	Refer to **Figure F1**
Site Area	Approximately 83 ha
Elevation	Approximately 20 m AHD
Current Site Owner(s)	Various. A summary of current Site ownership is provided in **Table T1**.
Municipality	City of Casey
Parish	Berwick
Current Zoning	The City of Casey Planning Scheme shows the majority of the Site to be zoned as Public Use – Rural Living (RLZ2). Portions of the Site in the north west and south east are zoned Public Use – Services and Utility (PUZ1). The Site is subject to Development Plan Overlay and the north west and central portions of the Site are subject to a Land Subject to Inundation Overlay. Planning information obtained from the Department of Sustainability and Environment Planning Schemes Online database is presented in **Appendix B** and summarised in **Table T1**.
Closest Surface Water Body	Berwick town drain forms the western boundary of the Site. A Melbourne Water constructed wetland is located in the south east corner of the Site. Ponds are present on nursery businesses in the central east and eastern portions of the Site. Further details regarding surface water are provided in **Section 2.7**.

2.2 Certificates of Title

The Site consists of 29 separate property titles. Current certificates of title are presented in **Appendix C**. Title information is summarised in **Table 1** (below).

A search of historical title information did not form part of the scope of works for this investigation.

2.3 Current Land Use

There is a variety of existing land uses at the Site, including horse and cattle grazing and associated rural residential housing, nursery businesses, a cattery and boarding kennel, and a Buddhist temple.

For reference purposes within this report, AECOM has allocated a lot number to each property. A summary of each lot and the land use at the time of AECOM's Site inspection is provided in **Table 1** (below). The location of each lot is presented in **Figure F2**.

Table 2: Summary of Properties

Lot Number	Address	Title Details		Approximate Area (ha)	Current Land Use
		Lot on Plan	Volume / Folio		
1	187 Golf Links Road	Lot A PS430080	Vol 10532/Fol 835	6.0	Empty paddock
2	322W-340W Centre Road	Lot Res1 PS336088	Vol 10214/Fol 176	2.9	Empty paddock
3	342-350 Centre Road	Lot 1 PS314788	Vol 10162/Fol 787	3.0	Empty paddock
4	352-356 Centre Road	Lot 1 PS338577	Vol 10220/Fol 398	2.0	Residential with storage of miscellaneous materials and stockpiled soil.
5	358-364 Centre Road	Lot A PS437692	Vol 10595/Fol 500	2.8	Paddock – cattle grazing
6	335-347 Centre Road	Lot 1 TP748354	Vol 8874/Fol 930	4.9	Residential with horse and pony grazing and pony trail riding business
7	136-138 Homestead Road	Lot 16 LP52810	Vol 8945/Fol 786	2.6	Residential and empty paddock
8	137 Homestead Road	Crown Land: Allot. 21 Sec. 4 Parish of Berwick; Parcel identifier 21~4\PP2131	Vol 9455/Fol 598	11	Residential and empty paddocks
9	349-351 Centre Road	Lot 1 TP213106	Vol 10104/Fol 059	2.5	Residential and empty paddock
10	353-355 Centre Road	Lot 13 LP52810	Vol 11117/Fol 658	2.5	Disused residential house and empty paddock
11	357-359 Centre Road	Lot 11 LP52810	Vol 10939/Fol 946	1.9	Disused residential house and empty paddock; stockpiled soil
12	361-363 Centre Road	Lot 9 LP52810	Vol 8481/Fol 689	1.9	Empty paddock
13	365-367 Centre Road	Lot 7 LP52810	Vol 8481/Fol 690	1.9	Residential with horse and pony grazing
14	369-371 Centre Road	Lot 5 LP52810	Vol 8600/Fol 978	2.1	Horse and pony grazing
15	373-375 Centre Road	Lot 3 LP52810	Vol 8341/Fol 266	2.1	Wholesale nursery business (Centaflora Nursery)
16	132 Homestead Road	Lot 14 LP52810	Vol 9004/Fol 508	2.6	Residential, dense pine plantation, paddocks
17	124-128 Homestead Road	Lot 12 LP52810	Vol 8481/Fol 688	1.9	Empty paddock

Lot Number	Address	Title Details		Approximate Area (ha)	Current Land Use
		Lot on Plan	Volume / Folio		
18	118-122 Homestead Road	Lot 10 LP52810	Vol 8481/Fol 687	1.9	Residential and paddock
19	112-116 Homestead Road	Lot 8 LP52810	Vol 8527/Fol 362	1.9	Nursery business – Alameda Homestead Nursery
20	106-110 Homestead Road	Lot 6 LP52810	Vol 8552/Fol 568	2.1	Berwick Boarding Kennels and Cattery
21	100-104 Homestead Road	Lot 4 LP52810	Vol 8519/Fol 196	2.1	Residential with horse, pony and alpaca grazing
22	94-98 Homestead Road	Lot 1 TP85701	Vol 9505/Fol 982	2.1	Residential, with horse, pony and alpaca grazing
23	125 Homestead Road	Lot 1 PS323945	Vol 10124/Fol 981	2.0	Buddhist Temple
24	117-123 Homestead Road	Lot 2 PS323945	Vol 10124/Fol 982	2.0	Residential, with paddock
25	109-115 Homestead Road	Lot 3 PS323945	Vol 10124/Fol 983	2.0	Disused residential with empty paddock
26	1 Ward Road	Lot 4 PS323945	Vol 10124/Fol 984	3.2	Paddock with cattle grazing in west and centre. Vegetated (established trees) in the east.
27	322-340 Centre Road	Lot 1 PS336088	Vol 10828/Fol 441	4.2	Empty paddock; stockpile soil and building rubble
28	340l Centre Road	Lot Res1 PS314788	Vol 10162/Fol 789	0.14	Open drainage channel
29	101-107 Homestead Road	Lot Res1 PS323945	Vol 10125/Fol 786	2.0	Melbourne Water Wetland/Retarding Basin

2.4 Surrounding Land Use

The surrounding land uses within approximately 500 m of the Site are described in **Table 3** below.

Table 3: Surrounding Land Uses

Direction from Site	Current Land Use
North	Residential area. A sporting complex is located to the north of Golf Links Road.
East	Residential area. Berwick Fields Primary School and the Old Cheese Factory are located within the residential area.
South	Greaves Road, then Berwick Springs Wetlands, which is surrounded by a residential area.
West	Homestead Road and Berwick Town Drain, then a residential area, including Heritage College Christian School.

2.5 Regional Geology and Hydrogeology

2.5.1 Geology

The "Geological Survey of Victoria 1:63,360 Geological Map Series, Cranbourne" (1967) indicates that the Site is underlain by recent Quaternary-aged alluvial deposits comprising peaty clay and clay (mainly swamp deposits), potentially overlying Silurian-aged sandstones, siltstones, mudstones and shales.

Acid Sulphate Soils

A review of the *Coastal Acid Sulphate Soil Hazard Westernport T7921 Woolamai T7920* 1:100 000 map (Department of Natural Resources and Environment, 2002), indicated that the Site is not in an area mapped as "probable acid sulphate soils". However, it is noted that in accordance with EPA Publication 655.1 *Acid Sulphate Soil and Rock* (2009), acid sulphate soils can occur in soil formations that:

- were originally deposited in shallow marine or estuarine environments, and
- are generally between 5 and 20m AHD.

Given that the Site is approximately 20 m AHD and the mapped geology consists of swamp and lake deposits, it is considered possible that either potential or actual acid sulphate soils are present at the Site.

2.5.2 Hydrogeology

A review of the Victorian Groundwater Beneficial Use Map Series – *South Western Victoria Water Table Aquifers* (Department of Natural Resources and Environment, 1995) indicated that groundwater beneath the Site occurs within the Pre-Cainozoic Bedrock aquifer, comprising siltstone, mudstone, sandstone and granite. Based on the beneficial use map, groundwater is expected to contain a total dissolved solids (TDS) concentration between 501 and 1 000 mg/L, which falls within the range of 'Segment A2' groundwaters; in accordance with the State Environmental Protection Policy – Groundwaters of Victoria (Groundwater SEPP).

In accordance with the Groundwater SEPP, Segment A2 groundwater is protected for the following beneficial uses:

- Maintenance of Ecosystems
- Potable Water Supply (Acceptable)
- Potable Mineral Water Supply
- Agriculture, Parks and Gardens
- Stock Watering
- Industrial Water Use
- Primary Contact Recreation
- Buildings and Structures

Based on the topography of the Site and the surrounding area, the regional groundwater flow direction is expected to be to the west towards Berwick town drain and ultimately to Port Phillip Bay, although localised variations may occur.

2.6 Nearby Registered Groundwater Use

A search of the Victorian Groundwater Database (VGD) was conducted by Sinclair Knight Merz. The results of the VGD search are provided in **Appendix D** and are summarised below:

- 44 registered groundwater bores were located within 2 km of the Site boundaries. Three registered groundwater bores were reported on-Site, however could not be located during the Site inspection (refer **Section 4.0**).
- The depth of the bores ranged between 2.44 m below ground surface (bgs) and 95 m bgs.
- Groundwater elevation was reported between 1.4 m bgs and 2 m bgs.
- Total Suspended Solids concentration was reported for one well at 300 mg/L.
- The lithology recorded on the VGD consisted of clay, sand, basalt sandstone and mudstone.
- The registered groundwater uses for the bores included domestic, dewatering, stock, irrigation, non-groundwater and miscellaneous.

2.7 Regional Topography and Surface Water

2.7.1 Regional Topography

The Site elevation is approximately 20 m AHD and the topography of the Site is generally flat.

2.7.2 Surface Waters

Berwick town drain forms the western boundary of the Site. A number of surface water features are present on the Site, including a Melbourne Water constructed wetland/retarding basin in the south east corner of the Site (Lot 29) and ponds on Lots 15 and 19, which are occupied by nursery businesses. No other ponds or farm dams were present at the Site.

An open drainage channel runs along the boundaries between lots 1 and 2, 27 and 28, 6 and 9, 7 and 9, 10 and 16, 16 and 17, and along Homestead Road to the Melbourne Water wetland. Open drains are also present along the alignment of Centre Road.

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3.0 Site History Review

3.1 Historical Aerial Photographs

Historical aerial photographs were accessed and inspected by AECOM at the Land Information Office of the Department of Sustainability and Environment (DSE). General observations relating to the Site and surrounding land use are summarised in chronological order in **Table 4** below. Selected aerial photographs are provided in **Appendix E**.

Table 4: Historical Aerial Photograph Summary

Photograph Details	Observations	
	On-Site	**Surrounding Land**
Date: 1960 Scale: 1:9 600 Height: 8 200 ft Run No: 34,35 Photo No: 43, 24	Most of the Site appears to be divided into large (~5 ha), undeveloped agricultural blocks. Buildings are located in two areas, one in the central east (present day lot 14) and the other in the south east corner (present day lot 26). Homestead, Centre and Ward roads are all present and appear unmade.	Land use in the surrounding area is similar to that on-Site, with slightly more development (more buildings, smaller blocks) to the east and west when compared to the north and south. Trees along some of the property boundaries indicate that the present-day open drain that runs from the north west to south east of the Site along property boundaries has been constructed.
Date: 1968 Scale: 1:9 600 Height: 5 100 ft Run No: 38E Photo No: 105	A number of buildings have been constructed in the central portion of the Site (lots 7, 9, 10, 11, 15 and 20). Much of the land between Centre and Homestead Roads appears to have been sub-divided into smaller allotments, consistent with the present day division of land. Two larger buildings, including a long, north-south orientated structure, have been added to Lot 14. The remainder of the Site is predominantly unchanged.	The surrounding area is predominantly unchanged with the exception of a few additional buildings to the north and east and a dam to the south west corner of the Site.
Date: 1978 Scale: 1:10 000 Height: 5 300 ft Run No: 4 Photo No: 139	Structures have been built on lots 5, 6, 16 and 22. The remainder of the Site is predominantly unchanged.	The surrounding area is predominantly unchanged, with the exception of relatively minor development to the north west and west of the Site and a dam to the south east of the Site.
Date: 1991 Scale: 1:15 000 Height: 7 800 ft Run No: 28 Photo No: 90	Structures have been built on previously vacant lots to the north and south of Centre and Homestead Roads (lots 8, 13, 18, 19 and 21). Additional buildings have been constructed on lots 5, 6, 7, 14, 15, 16, 20 and 22. The long north-south orientated structure on lot 14 appears to have been removed and the surrounding area redeveloped. The configuration on lot 15 is consistent with use as a nursery. The remainder of the Site is predominantly unchanged.	Residential subdivision has taken place to the north west of the Site, with smaller individual developments on larger agricultural blocks to the east and west. Princes Freeway is visible in the north east corner of the photograph.

Photograph Details	Observations	
	On-Site	Surrounding Land
Date: 2006 Google Maps (maps.google.com) Scale: unknown Height: unknown Run No: unknown Photo No: N/A	A wetland has been constructed on lot 29 and residential properties have been established on lots 24 and 25. Development consistent with a nursery business has been undertaken on lot 19 and further development of the nursery on lot 15 has occurred. The Buddhist Temple has been constructed on lot 23. Vegetation density has increased on lot 16 and the building present in the 1991 photograph is no longer present. Evidence of stockpiles and waste dumping is present on lots 4 and 27. The remainder of the Site appears to have been predominantly unchanged.	Most of the surrounding area has undergone residential subdivision. Constructed wetlands are present to the south and north west of the Site.

3.2 Priority Sites Register Review

AECOM conducted a search of the EPA Priority Sites Register (PSR) (updated on 1 March 2010) on 4 May 2010. The search indicated that the Site was not listed on, or within 1 km of a property listed on the PSR as of 1 March 2010.

A copy of the PSR extract is provided in **Appendix F.**

3.3 Environmental Audit Reports

EPA publishes a list of properties for which a Certificate or Statement of Environmental Audit has been issued under Part IXD of the Environment Protection Act 1970 (the Act). A review of the EPA list of Certificates and Statements of Environmental Audit (as of 4 May 2010) indicated that no Environmental Audits have previously been completed at the Site and no Certificates of Statements of Environmental Audit have been issued for properties within approximately 1 km of the Site.

3.4 Previous Environmental Site Assessment Reports

Based on the information available to AECOM at the time this investigation was undertaken no previous environmental investigations have been undertaken at the Site or within approximately 1 km of the Site.

4.0 Site Inspection

A Site walkover was completed by Eric Pritchard of AECOM on 21 May 2010. Site Photographs are provided in **Appendix G**. General observations made during the Site inspection are summarised in **Table 5** (below). Specific Site features and observations are displayed on **Figure F2**.

Table 5: General Site Inspection Observations

Item	Observation
Site Location	187 Golf Links Road, 322-364 Centre Road, 335-375 Centre Road, 94-138 Homestead Road, 101-137 Homestead Road and 1 Ward Road, Berwick. The Site is bounded by the Berwick town drain to the west, Greaves Road to the south, and by residential properties to the east and north.
Current Site Use	Refer to **Table 2** (above).
Site Features	Refer **Table 6**(below)
Vegetation	With the exception of hardstand areas around structures and driveways, most lots are grass-covered, with trees and shrubs generally limited to lot boundaries. No evidence of distressed vegetation was observed.
Surface Drainage and Topography	The topography of the Site is generally flat, with the exception of a number of areas of raised (filled) ground on a number of the properties, open drains running along the boundary of some properties, and a number of stockpiles of soil and/or building rubble.
Surface Water	A Melbourne Water constructed wetland is located in the south east corner of the Site (Lot 29) and ponds are present on Lots 15 and 19, which are occupied by nursery businesses. No other ponds or farm dams were present at the Site. An open drainage channel runs along the boundaries between lots 1 and 2, 27 and 28, 6 and 9, 7 and 9, 10 and 16, 16 and 17 and along Homestead Road to the Melbourne Water wetland. Open drains are also present along the alignment of Centre Road.
Chemical and Fuel Storage	No evidence of bulk chemical storage was observed during the Site inspection. Storage of small amounts of miscellaneous chemicals, such as paint and oil, was observed in sheds at some of the properties. It is noted that there is potential for storage of chemicals, such as fertilisers and pesticides, at the nursery businesses on lots 15 and 19. Permission to access to these properties was not granted to AECOM at the time of the Site inspection. No evidence of bulk fuel storage (such as above and underground fuel storage tanks) was observed during the Site inspection.
Septic Tanks	Most lots were on septic systems.
Potential Asbestos Containing Materials	Potential asbestos containing materials were observed within and surrounding a small stockpile at the rear (north) of Lot 20. There is the potential for existing buildings, such as houses and outbuildings, to contain asbestos containing materials, although a detailed hazardous materials assessment was not undertaken as part of the scope of work for the Site inspection.
Surrounding Land Uses	North: Residential area. A sporting complex is located to the north of Golf Links Road. East: Residential area. Berwick Fields Primary School and the Old Cheese Factory are located within the residential area. South: Greaves Road, then Berwick Springs Wetlands, which are surrounded by a residential area. West: Homestead Road and Berwick Town Drain, then a residential area, including Heritage College Christian School. Most of the surrounding area is residential. Constructed wetlands are present to the south and north west of the Site.

Item	Observation
Groundwater Monitoring Wells	The VGD search (refer **Section 2.6**) identified three groundwater bores at the Site. These bores could not be located during the Site inspection. AECOM recently installed three wells at the Site. Details of the well installation and groundwater assessment are provided in **Section 9.0**.

Specific observations for each lot are summarised in **Table 6** (below).

Table 6: Summary of Site Inspection Observations

Lot Number	Observations
1	Access permission not granted. Viewed from Lot 27. Empty paddock. North eastern and part of eastern boundary is directly adjacent to neighbouring residential subdivision, which is elevated (filled) above Lot 1 surface level. Filled ground extends a few metres into Lot 1.
2	Empty paddock. Small (5 m diameter) pile of basalt boulders in north central portion of the lot. No fence separating Lot 2 from Lot 27.
3	Empty paddock with raised/filled area in approximate south east portion of lot. Northern boundary is directly adjacent to neighbouring residential subdivision, which is elevated (filled) above Lot 3 surface level. Filled ground extends a few metres into Lot 3.
4	House in south east corner of lot. Southern and western portion of site covered with several soil stockpiles. Storage of miscellaneous machinery (cars, trucks), materials and hard waste (including scrap metal and concrete) in both skips and loose in western portion of lot. Northern boundary is directly adjacent to neighbouring residential subdivision, which is elevated (filled) above Lot 4 surface level. Filled ground extends a few metres into Lot 1. Property is sewered (based on conversation with owner).
5	Cattle grazing. Concrete observed at the surface suggests potential former structure near driveway in south central portion of lot. Occasional broken ceramic pipe fragments observed at surface. Small structure visible in aerial photo in south western portion of the Site not present. Several soil mounds/stockpiles observed in northern portion of the lot and one small stockpile in southern portion. The northern boundary is directly adjacent to neighbouring residential subdivision, which is elevated (filled) above Lot 5 surface level. Filled ground extends a few metres into Lot 5.
6	Residential including sheds and outbuildings, horse and pony grazing, pony trail riding business. Empty 200 L drum noted in north west corner of lot. Area of raised/filled ground at rear (south) of property – yellow-grey silty clay with weathered siltstone. Open drain with water present runs along eastern fence line.
7	Access permission not granted. Viewed from Lots 6 and 9. Residential house and associated outbuildings in southern portion of lot. Possible hard waste behind house block in southern portion of lot.
8	Residential house and small galvanised iron shed in north west corner of lot. Septic tank observed. Remainder of lot is empty paddocks. Former stockyard and race in north east corner of lot – shed observed in aerial photo not present. Occasional car tyre and scrap metal observed at surface.
9	Residential house and associated sheds/outbuildings in north east corner of lot. No other structures observed on the lot. Remainder of lot is empty paddock. Long grass at time of Site inspection limited visibility and access in paddock area.

Lot Number	Observations
10	Access permission not granted. Viewed from Centre Road and Lots 9 and 11. Disused residential house in north west corner of lot. Partially demolished shed visible behind house, potential hard waste and stockpiles behind house. No other structures observed on the lot. Remainder of lot is empty paddock. Small stockpile of soil along with wrecked car, scrap metal and a 200 L steel drum observed in south west corner of lot.
11	Disused residential house in north west corner of lot. No evidence of major chemical storage in shed – two propane gas bottles, petrol can, lubricant, paint, old car batteries. Remainder of lot is empty paddock. Several soil stockpiles present in north east corner (dark grey and yellow clay), north central portion of lot (grey clay) and a row of soil stockpiles along western boundary (predominantly grey clay). Small pile of tyres in north east portion of lot.
12	Empty paddock. Access permission not granted. Viewed from Lots 11 and 13. No structures observed on lot.
13	Residential house in north east corner. Septic tank observed. Small bottles of engine oil, paint tins and car battery on ground adjacent to house. Remainder of property used for horse and pony grazing. Four small horse feed sheds present, buried black plastic water lines run from front of block to these sheds.
14	Site used for horse and pony grazing. Large established trees at front of property. No above-ground structures observed. Gravel driveway from entrance along eastern side of lot. Concrete observed at the surface in central eastern portion of the lot. Anecdotal report of horse burial in western portion of Site. North west corner of the Site is raised with sand at the surface – reported to be used as a horse exercise/training yard. Possible fragment of asbestos containing cement sheet fragment observed at surface.
15	Nursery business (Centaflora Nursery). Access permission not granted. Viewed from Lot 14. Limited visibility due to hedge row along boundary with Lot 14. Pond present at front (north) of property. Small bottle of car wash detergent observed near shed adjacent to western boundary.
16	Access permission not granted. Viewed from Homestead Road and Lot 9. Soil mounds observed in north west portion of lot. Residential house in north east corner of lot. Shed in south west portion of lot, behind plantation of pine trees. Small pile of hard waste near entrance in south east corner of lot. Gravel entrance driveway in south east corner of lot.
17	Access permission not granted. Viewed from Homestead Road and Lot 11. Empty paddock, no evidence of structures observed. Several corrugated iron sheets observed on ground at rear of lot.
18	Access permission not granted. Residential house in southern portion of Site, empty paddock at rear, with established trees dividing house block from paddock.
19	Alameda Homestead Nursery. Access permission not granted. Visibility limited due to pine hedge around all boundaries.
20	Berwick Boarding Kennels and Cattery. Cattery and kennels and residential house/office at front (south) of property. Occasional fragment of potential asbestos containing cement sheeting observed at surface. Rear of property is paddock with sheep grazing. Pump (for septic system) observed in central portion of lot to north of kennels. Stockpiles of soil and rubble (concrete, bitumen, bricks, timber, rock, carpet, terracotta, plastic, potential asbestos containing cement sheeting, timber boxes) observed at rear of lot. Potential asbestos containing cement sheet material observed in stockpile in northern portion of lot.
21	Access permission not granted. Viewed from Homestead Road and Lots 14 and 20. Residential block at front (south) of property. A number of cars, trucks and buses, boats, horse floats and caravans were observed at rear of house block near western boundary. Paddocks at rear of property are used for horse and pony grazing.

Lot Number	Observations
22	Access permission not granted. Viewed from Homestead Road and Lots 14 and 20. House block and shed in south west corner, paddock at rear used for horse grazing.
23	Buddhist Temple. Access permission not granted. Temple, playground and driveway at front. Empty paddock at rear.
24	Residential house at front of block. Empty paddock at rear with exception of small sheds in northern portion of lot at rear.
25	Residential. Stockpiled soil adjacent to house. Large trees Empty paddock at rear.
26	Open paddock with cattle grazing in west and centre. No structures observed except for run down stock yard and race in south east corner of western portion of lot. A small soil mound and 200 L drum were observed in south western portion of lot. Eastern portion of Site is more heavily vegetated (established trees), as well as some that have been chopped down and is not currently used for grazing.
27	Empty paddock, no structures except boundary fence. Three small structures present in aerial photo not observed. South west corner of Site contains several stockpiles of soil and miscellaneous building rubble, including concrete, steel, rock, timber, plaster, bricks, plastic, electrical cord, and PVC pipe. Raised/filled area approximately 0.5 m above general Site surface level in southern portion of the lot, covered with blackberries.
28	Open drainage channel between Lots 27 and 3. Appears to be used as a cattle crossing point across drainage channel.
29	Melbourne Water “Homestead Road Wetland”/Retarding Basin

5.0 Areas and Contaminants of Potential Concern

5.1 Potential Sources of Contamination

On the basis of available historical information (**Section 3.0**) and observations made during the Site inspection (**Section 4.0**), identified potential sources of contamination (on-Site and off-Site) and contaminants of concern have been summarised in the following sections.

5.1.1 On-Site Sources

Potential on-Site sources of contamination identified are summarised in **Table 7** below.

Table 7: Potential On-site Sources of Contamination and Contaminants of Potential Concern

Potential Source of Contamination	Contaminants of Potential Concern
Agricultural land use - cattle and horse grazing	Organochlorine pesticides (OCPs), Organophosphorous Pesticides (OPPs), ammonia, nitrate, arsenic and other metals
Chemical storage and use: bulk and/or minor storage of organic-based fertilisers, herbicides, insecticides, pesticides and cleaning agents	OCPs, OPPs, phenoxy acid herbicides, triazine pesticides, carbamates, pyrethroids*, solvents, detergents, methyl bromide
Previous buildings / structures	Asbestos, hazardous materials
Construction of Site buildings / infrastructure	Metals, Polycyclic Aromatic Hydrocarbons (PAHs), asbestos
Imported fill	Various, including metals, Total Petroleum Hydrocarbons (TPH), PAHs; potentially detrimental to the aesthetic amenity of the Site
On-ground storage of miscellaneous waste materials	Various, including metals, TPH, PAHs, Polychlorinated Biphenyls (PCBs), solvents, asbestos; potentially detrimental to the aesthetic amenity of the Site
Stockpiling and/or burial of soils / solid waste debris	Various, including metals, TPH, PAH, asbestos; potentially detrimental to the aesthetic amenity of the Site.
Drainage channels: potential transport of on-Site contaminants	OCPs, OPPs, phenoxy acid herbicides, triazine pesticides, carbamates, pyrethroids, nitrate, ammonia, metals, TPH
Septic tank/s	Nitrate, ammonia, biological hazards
Horticultural flower production	OCPs, OPPs, carbamates
Potential livestock burials	Nitrate, ammonia, biological hazards; potentially detrimental to the aesthetic amenity of the Site.
Roadways / vehicle traffic	Petroleum hydrocarbons (TPH, PAH, monocyclic aromatic hydrocarbons – MAHs), metals (including lead)

* It is noted that pyrethroids are readily broken down by sunlight and are not persistent in the environment.

Given that no evidence of bulk chemical or fuel storage was observed, the primary on-Site potential contamination issues are expected to be:

- Potential impact to shallow soils resulting from general application of pesticides (particularly OCPs) across the Site.
- Importation of potentially contaminated fill.
- Livestock burials.
- Waste burials, including potential burial of hazardous materials such as asbestos.
- Septic tanks.

5.1.2 Off-Site Sources

Potential off-Site sources of contamination identified are summarised in **Table 8** below.

Table 8: Potential Off-site sources of contamination

Potential Source of Contamination	Proximity to Site	Contaminants of Potential Concern
Agricultural / horticultural activities including flower production, poultry farming and grazing	Previously existed immediately north, east and south of the Site	OCPs, OPPs, carbamates, ammonia, nitrate, arsenic and other metals.
Drainage channels: potential transport of off-Site contaminants	Immediately west of Site	OCPs, OPPs, phenoxy acid herbicides, triazine pesticides , carbamates, pyrethroids, nitrate, ammonia, metals, TPH
Roadways / vehicle traffic	Immediately surrounding site	Petroleum hydrocarbons (TPH, MAH, PAH), metals (including lead)
Septic tanks	Potentially on neighbouring properties, although existing residential areas likely to be sewered	Nitrate, ammonia, biological hazards
Chemical storage and use: bulk and/or minor storage of organic-based fertilisers, herbicides, insecticides, pesticides and cleaning agents.	Potentially on neighbouring properties, less than 500 m upgradient	OCPs, OPPs, phenoxy acid herbicides, triazine pesticides, carbamates, pyrethroids, solvents, detergents, methyl bromide.
Fuel Storage	Unknown	Petroleum hydrocarbons (TPH, MAH, PAH), potentially lead
Potential livestock burials	Potentially on neighbouring properties	Nitrate, ammonia, biological hazards

The on and off-Site chemicals of potential concern were used to develop the range of chemicals targeted in the sampling and analysis program.

6.0 Regulatory Framework for Assessment

6.1 Soil Quality Objectives

The State Environment Protection Policy (Prevention and Management of Contamination of Land), 2002 (Land SEPP) sets out the regulatory framework for the prevention and management of contaminated land within the State of Victoria. The goal of the policy is:

> *"to maintain and where appropriate and practicable improve the condition of the land environment sufficient to protect current and future beneficial uses of land from the detrimental effects of contamination by:*
>
> a) *preventing contamination of land; and*
> b) *where pollution has occurred, adopting management practices that will ensure:*
> i) *unacceptable risks to human health and the environment are prevented; and*
> ii) *pollution is cleaned up or otherwise managed to protect beneficial uses."*

The Land SEPP identifies land use categories and protected beneficial uses for each of these categories. Land (soil) is considered polluted where current and/or future protected beneficial uses for the relevant land use categories are precluded. Beneficial uses of land are considered precluded when relevant soil quality objectives set out in the Land SEPP have been exceeded.

Acid Sulphate Soils

The Industrial Waste Management Policy (*Waste Acid Sulphate Soils*) 1999, sets out the requirements for managing the disposal and reuse of waste ASS, and specifies the responsibilities of those involved.

Information on the identification and management of ASS for planning and/or land development can be found in the Victorian Coastal Acid Sulphate Soil Strategy (Department of Sustainability and Environment, 2009) and the Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulphate Soil (Department of Sustainability and Environment, 2010).

EPA Publication 655.1 *Acid Sulphate Soil and Rock* (2009) provides guidance regarding identification, classification and management of ASS and rock.

6.1.1 Proposed Land Use

It is understood that the Site is proposed to be subdivided for low density residential land use, with an associated commercial shopping precinct and constructed wetland areas. AECOM considers that these proposed land uses are respectively categorised as "Sensitive Use – Other", "Commercial" and "Recreation/Open Space" as defined in the Land SEPP.

6.1.2 Beneficial Uses to be Protected

The Land SEPP states that the following beneficial uses must be protected for "Sensitive use – Other", "Recreation/Open Space" and "Commercial" land use:

- Maintenance of ecosystems
- Human health
- Buildings and structures
- Aesthetics
- Production of food, fibre and flora (Sensitive use – Other" and Recreation/Open Space only)

6.1.3 Soil Investigation levels

In accordance with the Land SEPP, soil quality objectives for the identified protected beneficial uses were primarily sourced from the National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999) ('the NEPM'), specifically those provided in Schedule B(1) of the NEPM, 'Guideline on the Investigation Levels for Soil and Groundwater'.

The associated soil quality objectives for each of the protected beneficial uses identified above are discussed in the following sections. In addition to the soil quality objectives for the protection of beneficial uses of land, consideration must be given to the effect of residual soil contamination (if present) on other segments of the environment (*e.g.* contaminants in soil leaching into groundwater).

Maintenance of Ecosystems

Schedule B(1) of the NEPM provides a range of investigation levels for the protection of ecosystems, referred to as Ecologically-Based Investigation Levels (EILs). The following should be noted:

- A limited range of EILs are provided, and only for metals/metalloids (no regional-based EILs are currently available). These values are based on consideration of phytotoxicity, 'ANZECC B' levels (ANZEC/NHMRC, 1992) and soil survey data from urban residential properties in four Australian capital cities.
- The EILs do not currently discern between natural, modified and highly modified ecosystems, as defined in the Land SEPP.

EILs were used to assess on-Site environmental impacts, by direct comparison with soil concentrations found at each sampling location.

Human Health

Schedule B (1) of the NEPM provides a range of investigation levels for the protection of human health, referred to as Health-Based Investigation Levels (HILs). Values are provided for four exposure settings based on land use. These are:

- Setting A (NEPM HIL-A) - 'Standard' residential with garden/accessible soil (home-grown produce contributing less than 10% of vegetable and fruit intake; no poultry). This category includes children's day-care centres, kindergartens, preschools and primary schools.
- Setting D (NEPM HIL-D) - Residential with minimal opportunities for soil access. Includes dwellings with fully and permanently paved yard space such as high-rise apartments and flats.
- Setting E - (NEPM HIL-E) - Parks, recreational open space and playing fields. Includes secondary schools.
- Setting F - (NEPM HIL-F) - Commercial/industrial. Includes premises such as shops and offices as well as factories and industrial sites.

Given that the proposed land use of the Site is for Sensitive Uses – Other, Recreation/Open Space and Commercial, Setting A, E and F HILs were included as assessment criteria for comparison with actual soil conditions.

The NEPC guidelines are to be applied in the following manner:

- Average (arithmetic mean) soil concentrations across the site should be compared with the investigation levels.
- No single sample concentration is to exceed 250 % of its respective investigation level.
- The standard deviation of the concentrations for a given chemical is to be less than 50 % of its investigation level.

NEPM HILs are not available for several chemicals identified as potential contaminants at the Site – in particular TPH. In these cases, AECOM has adopted alternative generic or risk based criteria that were derived in a manner consistent with the derived objectives of the NEPM. The general approach for selection of human health based soil quality objectives is based on the following preferential approach:

1) National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999). This includes most assessed metals, polycyclic aromatic hydrocarbons (PAHs) and some organic compounds.
2) Canadian Council of Ministers for the Environment (CCME, 2008), used as an investigation level for TPH in soils and supplementing the existing objectives for aliphatic / aromatic ranges defined in the NEPM. The CCME guideline values assume conservative exposure durations for the land use scenarios anticipated.

For TPH in soils, the soil investigation levels were defined for the TPH ranges C_6-C_{36} adopted from CCME on the basis of the following:

- The exposure scenarios as outlined in the CCME petroleum hydrocarbon guidelines may be directly applied to Australia for adoption for equivalent land use scenarios (with the exception of public open space). Public open space guidelines have been derived from the residential and commercial land use criteria, based on relative exposure duration of public open space land use expected when compared to commercial and low density residential land use, a methodology that is consistent with the NEPM approach.
- Toxicological values for the CCME fractions incorporate the TPHCWG (Total Petroleum Hydrocarbon Criteria Working Group) approach. This approach of proportioning aliphatic / aromatic components of TPH into fractions with similar toxicological and environmental behavioural properties is consistent with the objectives of the NEPM.

AECOM notes that the fractionation of petroleum hydrocarbons for laboratory analysis does not directly correspond to the standards prescribed by CCME; similarly, the beneficial uses to be protected differ slightly from those mandated by the Land SEPP. The commercial and industrial guideline values given by the CCME have been adopted for the commercial beneficial use in this report. The CCME guidelines for residential/parkland were adopted for the Sensitive Use – Other (low-density residential) and recreation/open space beneficial use scenarios.

The CCME guidelines differentiate between coarse and fine-grained soils; for the purposes of this report the more conservative (coarse-grained) guidelines were adopted. A comparison of the guideline values adopted and the fractionation assumed for petroleum hydrocarbons is summarised in **Table 9** below.

Table 9: Adopted CCME Guideline Values

TPH Fraction		CCME Guidelines (mg/kg)	
Laboratory	**CCME**	**Commercial / Industrial**	**Residential / Parklands**
TPH C_6-C_9	Fraction 1: TPH C_6-C_{10}	320	30
TPH C_{10}-C_{14}	Fraction 2: TPH C_{11}-C_{16}	260	150
TPH C_{15}-C_{28}	-	-	-
TPH C_{15}-C_{36}	Fraction 3: TPH C_{17}-C_{34}	1 700	300

Buildings and Structures

The Land SEPP states, "*Contamination must not cause the land to be corrosive to or adversely affect the integrity of structures or building materials*". The potential for the condition of soils at the Site to adversely impact upon buildings includes:

- Elevated sulphate concentrations or acidic (low pH) soil conditions which are detrimental to some concrete structures.
- Ingress of contaminants into subterranean service lines (such as ingress into water supply pipelines).

Australian Standard 2159 (1995) *Piling – Design and Installation* has been considered in assessing this beneficial use. AECOM has adopted a guideline value of <2 000 mg/kg for sulphate (NEPM, 1999) and pH > 6.5 (AS 2159-1995) for the protection of buildings and/or structures.

Given that there is potential for ASS at the Site (refer **Section 2.5.1**), AECOM has also considered EPA Publication 655.1 *Acid Sulphate Soil and Rock* (2009) to guide assessment of the presence of ASS.

The potential for the condition of soils at the Site to adversely impact upon buildings and structures is discussed in **Section 8.3**.

Aesthetics

The Land SEPP states that "*Contamination must not cause the land to be offensive to the senses of human beings*". This beneficial use was assessed qualitatively based on observations of staining and odorous material recorded during the intrusive investigation.

Production of Food Fibre and Flora

The Land SEPP states "Contamination of land must not:

a) Adversely affect produce quality of yield; and

b) Affect the level of any indicator in food, flora and fibre produced at the site (or that may be produced) such that the level of that indicator is greater than that specified by the *Australia New Zealand Food Authority, Food Standards Code.*

Soil quality objectives are not currently available for the protection of this beneficial use. In their absence, NEPM EIL guideline values have been used to assess this beneficial use.

Adopted soil quality objectives for each relevant beneficial use are included within **Table T2**.

6.2 Groundwater Quality Objectives

The State Environment Protection Policy (Groundwaters of Victoria), 1997 (SEPP GoV) applies to management of groundwater quality in Victoria. The purpose of the policy is:

> *"to maintain and where necessary improve groundwater quality sufficient to protect existing and potential beneficial uses of groundwaters throughout Victoria"*

The SEPP (GoV) defines beneficial uses of groundwater on the basis of background salinity, measured as Total Dissolved Solids (TDS). Groundwater is considered to be polluted where current and/or future protected beneficial uses for the relevant segment are precluded. Beneficial uses of groundwater are considered precluded when relevant groundwater quality objectives have been exceeded, or where non-aqueous phase liquid is present.

6.2.1 Groundwater Segment

According to the Victorian Groundwater Beneficial Use Map Series: South Western Victoria, Water Table Aquifers (DCNR, 1995), the groundwater in the vicinity of the Site groundwater is expected to contain a total dissolved solids (TDS) concentration between 501 and 1 000 mg/L, which falls within the range of 'Segment A2' in accordance with the State Environmental Protection Policy - Groundwaters of Victoria (Groundwater SEPP). However, AECOM has also considered the following information when considering the appropriate groundwater segment for the Site:

- Laboratory TDS data reported during AECOM's groundwater monitoring (refer to **Section 9.4**) ranged from 4 000 mg/L to 4 500mg/L.
- Electrical conductivity (EC) measured in the field by AECOM during sampling was converted to TDS (using a conversion factor of 0.67 – refer to **Table T3**). TDS values calculated using this method varied from 3 700 mg/L to 4 300 mg/L.

Groundwater with TDS concentrations between 3 501 and 13 000 mg/L is defined as Segment C in the SEPP (GoV). Based on the laboratory analysed TDS, groundwater at the Site is considered to fall within Segment C, in accordance with the SEPP (GoV).

6.2.2 Beneficial Uses to be Protected

In accordance with the Groundwater SEPP, Segment C groundwater is protected for the following beneficial uses:

- Maintenance of Ecosystems
- Stock Watering
- Industrial Water Use
- Primary Contact Recreation
- Buildings and Structures

6.2.3 Adopted Groundwater Quality Objectives

In accordance with the SEPP (GoV), groundwater quality objectives for beneficial uses are primarily sourced from the Australian Water Quality Guidelines for Fresh and Marine Waters, published by the Australian and New Zealand Environment and Conservation Council (ANZECC, 2000).

Given that groundwater at the Site has been assessed as Segment C, and considering the beneficial uses listed in the above sections, AECOM has referenced the following groundwater quality objectives in order to assess impact to potential groundwater beneficial uses. It is noted that the adopted objectives are preliminary values that were developed using generic conservative assumptions that may not represent actual Site conditions. Exceeding the reference values for a specific chemical does not necessarily indicate that the impact poses significant environmental concerns, only that additional evaluation is warranted.

Table 10: Adopted Guidelines for Groundwater Beneficial Uses

Beneficial Use	Adopted Guideline Source
Maintenance of Ecosystems	Based on the depth to groundwater and inferred groundwater flow direction, the Berwick Town Drain is considered the likely point of discharge for groundwater at the Site. Groundwater may also discharge to the existing surface drainage channel that traverses the Site. For maintenance of ecosystems, the *State Environment Protection Policy (Waters of Victoria)* (SEPP (WoV)) and its schedules apply. The SEPP (WoV) adopts surface water objectives from *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ, 2000). The Site falls within the "Cleared Hills and Coastal Plains" segment of the SEPP (WoV), which is defined as a "slightly to moderately modified ecosystem". Therefore a 95% level of ecosystem protection has been adopted. Where no guideline values are available in ANZECC (2000) for potential contaminants of concern (e.g. metals, PAH and TPH) the following guidelines have been adopted: • PAH and selected metals – ANZECC (2000) Moderate and Low Reliability Trigger Levels. Where low reliability trigger values were adopted, these were used as an indicative interim working level only, in accordance with ANZECC/ARMCANZ, 2000. In particular, for chemicals with the potential to bioaccumulate, the 99% figure was adopted (where available and recommended by ANZECC/ARMCANZ, 2000). • TPH C_{10}-C_{36} – Netherlands Ministry of Housing (2009) Dutch Intervention Value 'Mineral Oil'.
Stock Watering	ANZECC (2000) guidelines for livestock drinking water quality.
Industrial Water Use	No guidelines have been adopted due to the wide range of possible industrial uses of water.
Primary Contact Recreation	ANZECC (2000) guidelines for recreational water quality and aesthetics.
Buildings and Structures	Specific guidelines for buildings and structures are not available, however Australian Standard 2195 (1995) Piling – Design and Installation was referred to for the protection of buildings and structures. In particular, the effects of pH and sulphate need to be considered.

The ANZECC (2000) guidelines indicate that where no contaminants are listed, for stock watering and primary contact recreation, the drinking water values should be adopted. The following hierarchy for drinking water guidelines was adopted.

1. NHMRC (2004) Australian Drinking Water Guidelines - Health.
2. USEPA (2010) Regional Screening Levels - Tap Water.

A groundwater quality objective for TPH is not available from the above references. Petroleum hydrocarbon mixtures are typically made up of numerous individual hydrocarbons with varying physical, environmental and

toxicological properties. AECOM has adopted the guideline value developed by the Netherlands Ministry of Housing (VROM 1994) for "mineral oil" consistent with the Hydrogeological Assessment (Groundwater Quality) Guidelines (EPA, September 2006). AECOM has not applied the 600 µg/L value as a threshold criterion, but rather to indicate the potential presence of semi-volatile hydrocarbons (C10 - C36 fractions) in groundwater. For detected volatile hydrocarbons (C6-C9 fractions), AECOM has defaulted to individual volatile organic compounds (*i.e.* benzene, toluene, ethylbenzene and xylenes (BTEX)) as follows:

Table 11: Summary of Adopted Guidelines – Volatile Petroleum Hydrocarbons

Analyte	Beneficial Use	Guideline Value	Adopted Guideline Source
Benzene	Stock Watering	1 µg/L	NHMRC (2004) Australian Drinking Water Guidelines – Health
	Primary Contact Recreation	10 µg/L	NHMRC (2004) Australian Drinking Water Guidelines – Health
Toluene	Stock Watering, Primary Contact Recreation	800 µg/L	NHMRC (2004) Australian Drinking Water Guidelines – Health
Ethylbenzene	Stock Watering, Primary Contact Recreation	300 µg/L	NHMRC (2004) Australian Drinking Water Guidelines – Health
o-Xylene	Stock Watering, Primary Contact Recreation	1 200 µg/L	USEPA (2010) Regional Screening Levels
Xylene (total)	Stock Watering, Primary Contact Recreation	600 µg/L	NHMRC (2004) Australian Drinking Water Guidelines – Health
TPH C6-C9 (aliphatic)	Stock Watering, Primary Contact Recreation	15 000 µg/L	WHO (2008) Guidelines for Drinking Water – Health

Adopted groundwater quality objectives for each relevant beneficial use are included within **Table T4**.

7.0 Analytical Data Validation

Analytical data validation is the process of assessing whether data is in compliance with method requirements and project specifications. The primary objectives of this process are to ensure that data of known quality are reported, and to identify if the data can be used to fulfil the overall project objectives. The process involves the checking of analytical procedure compliance and an assessment of the accuracy and precision of the analytical data from a range of quality control measurements generated from both the sampling and analytical programs.

Specific parameters that were checked and assessed for this project included:

- Collection of field duplicate and split duplicate samples.
- Preservation and storage of samples upon collection and during transport to the laboratory.
- Sample holding times and use of appropriate analytical procedures.
- Required limits of reporting.
- Laboratory duplicates.
- Laboratory blank results.
- Matrix spike recovery results.
- The occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

A summary of the above analytical data validation results is included in **Appendix H**. On the basis of the analytical data validation procedure employed and interpretation undertaken, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretative use.

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8.0 Limited Soil Investigation

AECOM conducted the soil sampling program giving consideration to the following standards and guidelines:

- Ahern et al, 2004. *Acid Sulphate Soils Laboratory Methods Guidelines*. Queensland Department of Natural Resources, Mines and Energy (Queensland NRME), 2004.
- Australia Standard AS 2159 *Piling – Design and Installation*. Standards Australia Publications 1995.
- Australia Standard AS 4482.1 *Guide to the investigation and sampling of sites with potentially contaminated soil*, Part 1: Non Volatile and Semi-Volatile Compounds. Standards Australia Publications, 2005.
- Australia Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil*, Part 2: Volatile Substances. Standards Australia Publications, 1999.
- Dear SE, Moore NG, Dobos SK, Watling KM and Ahern CR, *Soil Management Guidelines, Queensland Acid Sulphate Soil Technical Manual*. Department of Natural Resources and Mines, Indooroopilly, Queensland, Australia (DNRM, 2002)
- Environment Protection Authority (EPA) Victoria, 2009a. Publication 655.1, *Acid Sulphate Soil and Rock* (EPA, 2009a).
- EPA Victoria, 2009b. Industrial Waste Resource Guidelines (IWRG) Publication 621, *Soil Hazard Characterisation and Management*.
- EPA Victoria, 2009c. IWRG Publication 701, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes.
- EPA Victoria, 2009d. IWRG Publication 702, *Soil Sampling*.
- National Environment Protection Council (NEPC), 1999. National Environment Protection (Assessment of Site Contamination) Measure.
- State Environment Protection Policy Prevention and Management of Contamination of Land, June 2002.

8.1 Sampling Rationale and Nomenclature

Sample locations are presented on **Figure F3**. A limited number (35) of targeted soil sample locations were selected based on information acquired during the Site history and preliminary desktop review, and the Site inspection. Sample locations were restricted to properties where access permission had been granted by the property owner/occupier. The rationale for each of the soil sample locations, including geotechnical sample locations, is summarised in **Table 12** (below). Detailed methodology and results for the geotechnical sample locations are discussed in the geotechnical report, which is included as **Appendix A**.

Targeted soil sample locations were selected based on the following:

- Areas where excavation of soil for construction of the wetlands is proposed (based on information provided by GAA.
- Areas where potentially contaminating activities were identified during the Site inspection, such as stockpiled soil and rubbish.

In addition, a number of locations were included to assess “background” conditions at the Site.

It is noted that the number of environmental sample locations is less than the number of grid-based sample locations specified in Table E2 of AS 4482.1 (2005), and the number of sample locations for ASS analysis is less than the sampling frequency specified within Table 1 of EPA Publication 655.1.

Soil sample locations were numbered as follows:

- TPxx – test pit (excavation), with xx denoting sequential sample location number.
- SPxx – stockpile, with xx denoting sequential sample location number.
- BHxx – borehole (hand auger), with xx denoting sequential sample location number.
- MWxx – groundwater monitoring well, with xx denoting monitoring well number.

A summary of sample locations and rationale is provided in **Table 12** (below).

Table 12: Summary of Soil Sample Locations

Sample Number	Location	Environmental or Geotechnical?	Target/Rationale
SP01	Lot 27 – south west	Environmental	Stockpiles in south west corner of Lot 27
SP02	Lot 27 – south west	Environmental	Stockpiles in south west corner of Lot 27
SP03	Lot 27 – south west	Environmental	Stockpiles in south west corner of Lot 27
SP04	Lot 27 – south west	Environmental	Stockpiles in south west corner of Lot 27
TP05	Lot 2	Environmental / ASS Screening	Proposed wetland area - soil proposed to be excavated for construction of wetland
TP06	Lot 27 – south centre	Environmental	Raised land (potential imported fill)
TP07	Lot 6 – south	Environmental	Raised land (potential imported fill)
SP08	Lot 11 – north centre	Environmental	Stockpile in north central portion of Lot 11
SP09	Lot 11 – centre	Environmental	Stockpile in north central portion of Lot 11
SP10	Lot 11 – centre west	Environmental	Stockpile along western boundary of Lot 11
TP11	Lot 14 – northwest	Environmental	Raised land (potential imported fill) and former horse exercise yard
TP12	Lot 14 – north	Environmental	Location of former house and driveway
SP13	Lot 20 – north	Environmental	Fill stockpile near northern boundary of Lot 20
TP14	Lot 14 – south	Geotechnical	Potential location of wetland
TP15	Lot 13 – south	Geotechnical	Potential location of wetland
TP16	Lot 27	Geotechnical	Potential location of wetland
TP17	Lot 2	Geotechnical	Potential location of wetland
TP18	Lot 11 – centre	Geotechnical	Potential location of wetland
TP19	Lot 8 – north east	Geotechnical	Potential location of wetland
TP20	Lot 8 – south east	Geotechnical	Assess background soil conditions
TP21	Lot 8 – south east	Geotechnical	Potential location of wetland

Sample Number	Location	Environmental or Geotechnical?	Target/Rationale
TP22	Lot 9 – south	Environmental/ Geotechnical/ ASS Screening	Potential location of wetland
TP23	Lot 9 – north	Geotechnical	Potential location of wetland
TP24	Lot 8 – south west	Environmental/ Geotechnical/ ASS Screening	Assess background soil conditions
TP25	Lot 24 -south	Environmental/ Geotechnical/ ASS Screening	Potential location of wetland
TP26	Lot 25	Geotechnical	Potential location of wetland
TP27	Lot 20	Geotechnical	Assess background soil conditions
TP28	Lot 3 – south west	Geotechnical	Potential location of wetland
TP29	Lot 3 – central	Geotechnical	Assess background soil conditions
SP30	Lot 25 – north	Environmental	Stockpile near house on Lot 25
SP31	Lot 4	Environmental	Stockpiles on Lot 4
BH32	Lot 14 – southwest	ASS Screening	Potential location of wetland
BH33	Lot 8 – south centre	ASS Screening	Potential location of wetland
MW01	Lot 27	ASS Screening/Groundwater Investigation	Groundwater monitoring well, with ASS screening due to proximity to potential location of wetland.
MW02	Lot 14	ASS Screening/Groundwater Investigation	Groundwater monitoring well, with ASS screening to assess potential for acid sulphate soils away from the proposed wetland.
MW03	Lot 8	ASS Screening/Groundwater Investigation	Groundwater monitoring well, with ASS screening due to proximity to potential location of wetland.

8.2 Soil Sampling Methodology

The methodology for the environmental component of the soil assessment is summarised below. The specific methodology for the geotechnical component of the soil assessment is provided in **Appendix A**.

- Test pits were advanced using an excavator. The total depth of the test pits ranged from 1 m bgs to 3.2 m bgs. All test pits were terminated in natural soil. Stockpile sampling was undertaken using an excavator, or by grab sampling (SP13). In addition, two boreholes (BH32-33) were advanced using a hand auger to a depth of up to 1.05 m bgs.
- Soil classification and descriptions were based on Unified Soil Classification System (USCS) and AS4482.1 (2005). Samples were logged and the following information recorded in the field: soil type, colour, grain size, inclusions, moisture conditions, staining and odour (if observed). Logs depicting soil conditions encountered for test pits, boreholes and monitoring wells are included as **Appendix I**. Stockpile descriptions are presented in **Section 8.3.1** (**Table 14**) of this report.
- Samples were collected at or near the surface and at changes in observed soil type.
- Soil samples were collected directly from the excavator bucket or hand auger and were placed in clean acid washed glass jars supplied by the laboratory or snap lock bag (for ASS screening).

- The hand auger was cleaned before use and between samples with Decon 90 solution and subsequently rinsed in a separate vessel of clean water to minimise the potential for cross-contamination between samples and sample locations.
- Soil samples were screened for volatile organic compounds (VOCs) using a PID which was calibrated to a known concentration of iso-butylene calibration gas. A copy of the calibration certificate is provided in **Appendix J**. VOC data is presented on the logs in **Appendix I**.
- Samples were stored in a chilled cooler while on-Site and in transit to the laboratory. Samples were transported to the analytical laboratories under chain of custody (COC) protocols. A copy of the laboratory COC forms is included with the laboratory certificates of analysis in **Appendix K**.
- Soil samples collected for ASS analysis were immediately stored in the freezer on arrival at the primary analytical laboratory.
- The appointed primary analytical laboratory was MGT Environmental (MGT) and the secondary laboratory was Australian Laboratory Services (ALS). Both of these laboratories are accredited by National Association of Testing Authorities Australia (NATA) for the analyses undertaken. Details of the analytical methods used are provided with the laboratory test certificates in **Appendix K**. Primary and blind duplicate samples were analysed by the primary laboratory. Split duplicate samples were analysed by the secondary laboratory.
- On completion of the test pitting works, excavations were backfilled with the soil risings and nominally compacted using the weight of the excavator bucket.
- Soil sample locations were recorded using a hand-held GPS unit and the location of monitoring wells was surveyed by a licensed surveyor.
    - Laboratory Analysis

Soil samples were analysed for the following potential contaminants of concern:

- Six samples, along with one blind duplicate (QC01) and one split duplicate (QC02) were analysed for an EPA Victoria IWRG621 suite of analytes, including metals (As, Cd, Cr^{6+}, Cu, Co, Pb, Hg, Mo, Ni, Sn, Se, Zn), TPH, MAH, PAHs, volatile chlorinated hydrocarbons (VCHs), OCPs, cyanide, fluoride and phenols.
- Four samples were analysed for metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), PAH, TPH, OCPs and OPPs.
- ASS:
    - Eight samples, along with one blind duplicate (QC101) and one split duplicate (QC102) were submitted for field pH screening (pH-F – field pH test and pH-F_{OX} – field pH peroxide test).
    - Three samples were analysed for the chromium (S_{Cr}) ASS suite and five samples were analysed for the suspension peroxide oxidation combined acidity and sulphur method (SPOCAS) ASS suite. The chromium suite is generally effective for assessing soils with lower percentages of sulphide and for soils containing organic material (such as clay), while the SPOCAS suite is effective for coarser textured sediments. EPA publication 655.1 recommends using a combination of both methods.

8.3 Results

8.3.1 Site Specific Geological Conditions

Copies of the test pit and bore logs are presented in **Appendix I** and photographs of soil conditions encountered are presented in **Appendix G**. The generalised soil profile of the Site is summarised in the **Table 13** (below). Soil descriptions are also available within the geotechnical report (**Appendix A**).

Table 13: Generalised Soil Profile

Depth (m bgl)	Soil Description
0 – 0.3	FILL (reworked natural soils). Sandy/silty clay, brown, moist, with occasional rock, brick and charcoal fragments, no odour. Or TOPSOIL. Silt with clay, dark brown, slightly moist, with roots, no odour
0.3 – >3	CLAY, high plasticity, brown/grey, becoming mottled red/orange/brown/grey with depth, moist, no odour.

A number of stockpiles were observed during the Site inspection (refer **Table 6** and selected photographs in **Appendix G**). Samples were collected from selected stockpiles and submitted for laboratory analysis. A summary of the soil and material type encountered in sampled stockpiles is provided in the table below.

Table 14: Stockpile Summary

Lot ID	Area Description	Sample ID	Sample Depth	Sample Description	PID Reading (ppm)
4	Various stockpiles of soil at rear of Lot 4	SP31	0.3		0
11	Soil stockpiles in centre north portion of the Lot over a 30 m x 10 m area with grass cover.	SP08	0.6	Silty CLAY, mottled grey and light brown, moist, soft.	0
	Three soil stockpiles in a 7 m x 1 m area.	SP09	0.8	Sandy SILT, pale brown, loose, dry.	0
	60 m row of small (3 m x 3 m x 1 m) soil stockpiles along western fenceline of Lot 11.	SP10	0.7	Sandy SILT, pale brown, loose, dry, brick fragments, roof tiles, wood, and concrete.	0
20	Stockpile (2 m x 2 m x 1.5 m) of soil containing fibrous cement sheeting and other building rubble.	SP13	0.0	Clayey SAND: very dark brown, moist, medium density, some gravel.	0
25	Soil stockpile adjacent to house at Lot 25.	SP30	0.3		0
27	Numerous small stockpiles (8 m x 2 m x 1.5 m) of scrap wood mixed with bricks, PVC piping, glass and soil. Large (0.5 m x 0.5 m x 0.5 m) concrete slab.	SP01	0.3	Sandy CLAY, brown, soft, very moist, brick fragments, rubble (angular, <10cm), PVC piping, glass.	0
	50 m x 60m area of stockpiled soil covered with grass and thistles.	SP02	0.5	Sandy SILT, brown, friable, dry, abundant roots.	0
	Two soil stockpiles (10 m x 7 m x 1.5 m) with occasional grass cover.	SP03	0.5	Sandy CLAY, dark brown, soft, moist, lots of roots.	0

Lot ID	Area Description	Sample ID	Sample Depth	Sample Description	PID Reading (ppm)
	6 small stockpiles over an area of 9 m x 6 m x 1.5 m).	SP04	0.5	Sandy CLAY, brown, soft, slightly moist, brick fragments, large roots.	0

8.3.2 Site-Specific Contaminant Observations

Soil samples were screened for the presence of VOCs using a PID. In addition, observations of soil characteristics, such as odour and staining and the presence of anthropogenic materials (if observed), were recorded on soil logs (**Appendix I**).

No elevated PID readings or other observations that may have indicated the presence of soil contamination were recorded during the soil sampling program. However, potential asbestos containing material was observed at the surface and within a stockpile on Lot 20, and anthropogenic materials were observed in shallow fill or stockpiles on various properties. These included:

- Small quantities of charcoal within shallow fill at TP06 (Lot 27) and TP07 (Lot 6);
- Bricks and rock fragments within shallow fill at TP07 (lot 6), TP12 (Lot 14) and TP18 (Lot 11);
- Stockpiled fill with various building rubble such as concrete, bricks, timber and plastic on Lots 11, 20, 25 and 27.

8.3.3 Soil Analytical Results

Soil analytical results compared to the adopted beneficial use soil quality objectives are presented in **Table T2** and laboratory certificates of analysis are presented in **Appendix K**.

No exceedences of the adopted beneficial use objectives were reported at the sample locations tested for the analysed chemicals. With respect to the aesthetics beneficial use, AECOM did not observe evidence such as odours, staining or significant waste material at the Site surface or in shallow soils that would preclude this beneficial use, with the exception of stockpiles (refer **Sections 4.0 and 8.3.2**) containing anthropogenic materials, which may be detrimental to the aesthetics beneficial use.

8.3.4 Acid Sulphate Soils Testing

Field pH Tests

Field pH tests in accordance with Appendix 1 of EPA Publication 655.1 were undertaken by MGT on eight selected samples. In accordance with EPA Publication 655.1, field pH tests are to be interpreted as follows:

Table 15: Interpretation of Field pH Results (Reproduced from EPA Publication 655.1)

pH_F	pH_{FOX}	ΔpH	Reaction Rate	Action Required
≥5.0	≥5.0	≤2	1-2	If no other field indicators or ASS risk indicators are present, no further action is required
> 4.0 and < 5.0	> 3.0 and < 5.0	>2	≥2	Potential ASS (PASS) may be present, further assessment is required
≤4.0	≤3.0	>2	≥2	Actual ASS (AASS) or PASS are likely to be present, further assessment is required.

The results of AECOM field pH testing are provided in the laboratory certificates of analysis in **Appendix K** and summarised in the following table:

Table 16: AECOM Field pH Results

Sample ID	pH_F	pH_{FOX}	ΔpH	Reaction Rate (laboratory, with AECOM conversion to EPA 655.1 Reaction Rate)	Action Required (Based on EPA Publication 655.1)
MW01_1.0	5.7	3.9	1.8	Low (1)	PASS may be present based on pH_{FOX} <5.0, therefore further assessment is required
MW01_1.5	5.5	3.9	1.6	Low (1)	PASS may be present based on pH_{FOX} <5.0, therefore further assessment is required
MW02_1.0	6.9	5.3	1.6	Low (1)	Both pH_F and pH_{FOX} >5.0 and ΔpH <2, therefore no further action is required if no other field indicators or ASS risk indicators are present
MW02_1.5	7.2	5.5	1.7	Low (1)	Both pH_F and pH_{FOX} >5.0 and ΔpH <2, therefore no further action is required if no other field indicators or ASS risk indicators are present
MW03_1.0	6.6	4.7	1.9	Low (1)	PASS may be present based on pH_{FOX} <5.0, therefore further assessment is required
MW03_1.5	6.4	4.8	1.6	Extreme (4)	PASS may be present based on pH_{FOX} <5.0, and likely to be present based on “extreme” reaction rate, therefore further assessment is required
BH32_1.0	6.5	4.7	1.8	Low (1)	PASS may be present based on pH_{FOX} <5.0, therefore further assessment is required
BH33_0.65	6.0	4.3	1.7	Medium (2)	PASS may be present based on pH_{FOX} <5.0, therefore further assessment is required

Based on these results, it is considered that PASS may be present at the Site and EPA Victoria Publication 655.1 recommends further assessment. AECOM requested additional laboratory analysis (Cr and SPOCAS suites) on selected samples to further assess the above results.

Acid Sulphate Soils – Chromium Reducible Sulphur and SPOCAS Analysis

In addition to the above field screening of soil samples (**Table 16**), seven samples were analysed for their potential to produce ASS using the Chromium Reducible Sulphur (S_{CR}) and SPOCAS tests. Laboratory S_{CR} and SPOCAS results are presented in **Appendix K** and summarised in **Table 17** (below).

The potential for soils to produce “net acidity” upon complete oxidation can be assessed using “acid base accounting”. In order to determine soil net acidity, “potential” acidity and “existing” acidity must be assessed using appropriate analytical methods.

In the current study, AECOM submitted samples for analysis using the S_{CR} and SPOCAS methods to assess “titratable actual acidity” (TAA; also referred to as actual/existing acidity) and S_{CR} or peroxide oxidisable sulphur (S_{POS}; both of which can also be referred to as potential acidity).

EPA Victoria (2009) recommends that the net acidity for PASS be calculated using the following equation:

Net acidity = Potential acidity + Actual acidity + Retained acidity – (ANC/FF)

Where:

Potential acidity – is the laboratory measured sulphide content (S_{POS} where SPOCAS was performed; otherwise S_{CR}).

Actual acidity – is the existing acidity measured in the laboratory as recently generated and soluble acidity (TAA).

Retained acidity – is the 'less available' fraction of the existing acidity and is measured as the residual acid soluble sulphur (S_{RAS}) remaining in soils after peroxide digestion and acidity analysis as part of the SPOCAS method.

ANC – is the acid neutralising capacity which is a measure of the natural buffering capacity of the soil.

FF – is the fineness factor which can be applied to the ANC result to allow for the poor reactivity of coarser carbonate or other acid neutralising materials.

It should be noted that retained acidity was not measured in the current investigation as the *Acid Sulphate Soils Laboratory Methods Guidelines* (Queensland NRME, 2004) state that for soils with a pH_{KCl} greater than 4.5, S_{RAS} (retained acidity) does not need to be determined. Therefore retained acidity was not included in the assessment of net acidity during this investigation.

The acid neutralising capacity of the soils sampled in the current investigation has not been accounted for when determining net acidity because the Queensland NRME (2004) guidelines state that:

> *'Any ASS material with a pH_{KCl} of <6.5 must be assumed to have an effective ANC of zero (even if shell is present in the sample). Clearly, if the pH has dropped below 6.5 then acid neutralising components in the soil are not reactive/available enough to keep pace with acid generation from sulphide oxidation and to maintain pH of the material above 6.5 (the desired level).'*

It has therefore been assumed that the ANC of the soils in this investigation is equal to zero; an ANC of zero means that no fineness factor was assumed.

The results of chromium reducible sulphur and SPOCAS analysis are provided in the laboratory certificates of analysis in **Appendix K** and summarised in the following table:

Table 17: Summary of SPOCAS results used in the determination of net acidity

Test Pit Location	Depth	pH_{KCl}	Actual Acidity (%S)	Potential Acidity (%S)	Net Acidity (%S)
TP05	0.5-0.55	6	0.03	<0.02	0.05
TP22	0.5-0.7	5.6	0.06	<0.02	0.08
TP24	0.5-0.6	5.8	0.05	<0.02	0.07
TP25	0.5-0.6	4.9	0.03	0.02	0.05
MW01	1.0	5.2	0.03	<0.02	0.05
MW01	1.5	4.9	0.03	<0.02	0.05
BH32	0.65	4.8	0.05	0.02	0.07
Average Net Acidity (%S)					0.06

Note – Where potential acidity was reported as below the method detection limit it has been conservatively assumed that the potential acidity of the sample is equal to the detection limit for calculation of net acidity.

EPA Victoria Publication 655.1 (2009) states that where a positive net acidity is reported, the soils under investigation have the potential to generate acid. Given that the average net acidity in analysed soil samples from the Site was 0.06%, it is concluded that that they have the potential to generate acid.

In addition to the above, AECOM compared the net acidity results with the texture based action criteria presented in Table 3 of EPA Victoria Publication 655.1 (action criteria sourced from *Queensland Acid Sulphate Soil Technical Manual, Soil Management Guidelines*, DNRM, 2002). The net acidity criterion for > 1000 tonnes of soils classed as medium to heavy clays and silty clays (clay content > 40%, which is consistent with soils encountered at the Site) is 0.03 %S. Given that AECOM's net acidity calculation is higher than this criterion, the

material represented by AECOM's samples is classified as ASS in accordance with EPA Victoria Publication 655.1.

Risk Categorisation and Management

After the determination of ASS at the Site it is necessary to categorise the risk level that these soils may pose if disturbed by the proposed Site upgrades. In accordance with EPA Publication 655.1, ASS brought to the surface must be monitored and managed. It is generally accepted that a suitable management strategy is to neutralise the ASS by addition of lime. Consequently, the rates at which the treatment must be applied should be assessed.

Neutralisation of ASS involves the physical incorporation of alkaline materials into the soil. Lime is a common alkalising agent used in the neutralisation process; however, calculation of site-specific liming rates is required to ensure effective neutralisation of ASS. Liming rates for the Site were calculated using the following equation (from DNRM, 2002):

(TAA + TPA) x 30.59 x 1.5 x 1.02

Where:

TAA = total actual acidity of soil sample

TPA = total potential acidity calculated from CRS x 623.7 – which converts CRS from %S to H+/tonne

30.59 = converts value to H_2SO_4

1.5 = Adds a factor of safety to the equation

1.02 = Converts value to $CaCO_3$

The result of this equation gives the liming rates in tonnes.

The next step is to categorise the risk posed by ASS by comparing the amount of material likely to be disturbed with the potential acidity (assessed from the results of S_{CR} analysis). The treatment categories that are outlined by DNRM (2002) are:

- Low treatment (category L) – for disturbances of ASS requiring a treatment rate of less than 0.1 tonnes of lime,
- Medium treatment (category M) – for disturbances of ASS requiring a treatment rate of >0.1 – 1 tonne of lime,
- High treatment (category H) – for disturbances of ASS requiring a treatment rate of >1 – 5 tonnes of lime,
- Very high treatment (category VH) – for disturbances of ASS requiring a treatment rate of >5 – 25 tonnes of lime,
- Extra high treatment (category XH) – for disturbances of ASS requiring a treatment rate of >25 tonnes of lime.

Based on the "Theme 2 Wetland Fingers to Reduce Fill" Drainage Plan provided by GAA, approximately 170 000 m^3 (*in-situ*) of soil may be disturbed as part of wetland construction. Based on an assumed average bulk density of 1.8 for clay, up to 306 000 tonnes of ASS may need to be treated to ensure neutralisation. This assumes that all soil to be disturbed at the Site is classified as ASS. Based on DNRM (2002), the risk category associated with ASS at the Site can be defined as Extra High Treatment (category XH).

It should be noted that the total number of samples analysed is less than that specified in Table 1 of EPA Publication 655.1 (2 boreholes per ha for sites larger than 4 ha, equivalent to 166 samples for an 83 ha site). In addition, limited vertical sampling coverage has been achieved by the sampling undertaken to date. Therefore further investigation may reduce the total volume potentially requiring treatment.

DNRM (2002) provides estimated treatment levels (tonnes of aglime) required to treat disturbed ASS. Based on the above calculations, the liming rate (pure fine aglime, $CaCO_3$) required to neutralise 306 000 tonnes of ASS at the Site is 2.8 kg per tonne. Applying this rate to the entire soil mass, approximately 850 tonnes of lime would be required to neutralise this mass of ASS. However, it is noted that liming rates are calculated on a dry mass basis and therefore the mass of soil used in this calculation is a conservative estimate.

8.3.5 Geotechnical Laboratory Results

Details of geotechnical laboratory results are provided within the geotechnical report (**Appendix A**). A summary of these results is provided below. This summary should be read in conjunction with the full geotechnical report in **Appendix A.**

- Atterberg Limits undertaken on clay soils at the Site indicate a Plasticity Index (PI) of 56%-76%, which is typical of highly reactive soils.
- pH in soil samples ranged from 5.2-7.2 and sulphate ranged from 60-270 mg/kg. Based on these results, soil is considered to be "non-aggressive" in accordance with AS 2159-2009 *Piling – Design and Installation*.
- Laboratory Californian Bearing Ration (CBR) testing undertaken on the clay residual soils resulted in CBR values of 3.5% and 6.0%.
- Moisture content ranged from 18-38%.
- The results of the dispersion testing indicated that the material is typically non-dispersive (Emerson Class 6 to 8), although one test result returned as highly dispersive (Emerson Class 2).

9.0 Limited Groundwater Investigation

The groundwater investigation was conducted in general accordance with relevant parts of the following policies and guidelines:

- ANZECC and ARMCANZ, October 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- EPA Victoria, 2009c. IWRG Publication 701, Sampling and Analysis of Waters, Wastewaters, Soils and Wastes.
- EPA Victoria, 2006. Publication 668, Hydrogeological Assessment (Groundwater Quality) Guidelines.
- EPA Victoria, 2000. Publication 669, *Groundwater Sampling Guidelines*.
- State Environment Protection Policy *Groundwaters of Victoria*, December 1997.

9.1 Sampling Rationale and Nomenclature

Three groundwater monitoring wells (MW01-MW03) were installed by AECOM. Monitoring well locations are presented on **Figure F3** and logs of soil conditions encountered, along with monitoring well construction details, are presented in **Appendix I**. Monitoring well locations were selected based on AECOM's assessment of likely groundwater flow direction to allow an assessment of groundwater quality entering and exiting the Site, and to allow assessment of groundwater flow direction.

9.2 Groundwater Assessment Methodology

The groundwater assessment methodology is summarised below.

- Groundwater monitoring wells were installed to a maximum depth of 9.7 m below ground level (bgl) using solid flight augers.
- Monitoring wells were constructed using 50 mm machine threaded and slotted class 18 uPVC casing. Graded sand was added to approximately 0.5 metres above the top of the screened interval. A minimum 0.5 metres hydrated bentonite seal was added above the filter sand and the annulus of the well was then filled with grout to the surface. All wells were finished with lockable steel monument covers.
- Following installation, monitoring wells were developed by hand using clean disposable bailers.
- The elevation and position of the wells were surveyed by a licensed surveyor (Accurate Land Surveyors). The top of casing elevation was surveyed relative to AHD to an accuracy of 0.001 m and the position of the wells was surveyed to MGA to an accuracy of 0.01 m. Survey data are presented in **Appendix L**.
- Monitoring wells were gauged using a water level meter within a two hour period. Water levels were measured relative to the casing elevation. The instrument was decontaminated before and after use in each well.
- Groundwater sampling was undertaken using low-flow sampling techniques ("Micropurge"). Field water quality parameters were measured (including pH, electrical conductivity, dissolved oxygen, oxidation reduction potential and temperature) during purging. A calibration certificate for the water quality meter is provided in **Appendix J**. Sampling occurred once these parameters had stabilised. Purged water was deemed to be representative of formation waters when consecutive readings for three of the four parameters were within a range of +/- 10% for dissolved oxygen, +/- 0.05 units for pH, +/- 3% for EC and +/- 0.1 degrees for temperature. Water levels were measured prior to and during purging so that the pumping rate could be adjusted to minimise drawdown. The groundwater field data forms are provided within **Appendix M**.
- Groundwater sampling equipment was decontaminated between each well. New, dedicated micropurge tubing and pump bladders were used at each sampling location. The groundwater sampling equipment (pump body) was scrubbed in a Decon 90 solution and subsequently rinsed with fresh water. Disposable gloves worn during the sampling were replaced after each sample was collected.
- Following stabilisation of field parameters, samples were placed into laboratory-supplied bottles containing appropriate preservatives for the selected analytical testing. All groundwater samples collected for metals analysis were filtered in the field.

- Samples were stored in a chilled cooler while on-Site and in transit to the laboratory. Samples were transported to the analytical laboratories under chain of custody (COC) protocols. Copies of the laboratory COC forms are included with the laboratory certificates of analysis in **Appendix K**.
- The appointed primary analytical laboratory was MGT Environmental (MGT) and the secondary laboratory was Australian Laboratory Services (ALS). Both of these laboratories are accredited by NATA for the analyses undertaken. Details of the analytical methods used are provided with the laboratory test certificates in **Appendix K**. Primary and blind duplicate samples were analysed by the primary laboratory. Split duplicate samples were analysed by the secondary laboratory.
- Purged groundwater was disposed of at the Site surface.

9.3 Laboratory Analysis

Groundwater samples were analysed for the following potential contaminants of concern and geochemical parameters:

- Metals (Ag, As ,B, Be, Cd, Cr, Co, Cu, Mn, Hg, Mo, Ni, Pb, Sb, Se, Sn, V, Zn)
- Cations (sodium, calcium, magnesium, potassium) and anions (chloride, sulphate, speciated alkalinity)
- Total Dissolved Solids (TDS)
- pH
- Nitrate, nitrite and ammonia
- Fluoride
- Cyanide
- TPH
- PAHs
- Phenols,
- OCPs and OPPs
- Volatile halogenated compounds

9.4 Results

9.4.1 Site-Specific Hydrogeological Conditions

Monitoring well construction logs are presented within **Appendix I**. The following field observations and measurements were noted during drilling and groundwater sampling:

- Groundwater was encountered within brown clay at approximately 8-9 m bgl in MW01 and MW03 and at approximately 5.5 m bgl in MW02. In all wells, stabilised groundwater level was higher than the encountered groundwater level, indicating that groundwater at the Site may be semi-confined. In particular, the standing water level in MW02 rose to above the top of casing following installation.
- No odours or other evidence of contamination (e.g. sheen) were noted during well installation and groundwater sampling.
- Groundwater was generally clear/pale brown with low turbidity.

9.4.2 Standing Water Levels and Groundwater Flow Direction

The elevation of the top of casing for all new each well was surveyed to Australian Height Datum (AHD) by a licensed surveyor. Survey data is presented in **Appendix L**. SWLs are summarised in the following table.

Table 18: Groundwater Elevation

Monitoring Well ID	Location	Easting	Northing	Surface Elevation (m AHD)	Top of Casing Elevation (m AHD)	Depth to Water (m bgl)	Standing Water Level (m AHD)
MW01	Lot 27	352509.20	5787563.47	17.998	18.942	1.379	17.563
MW02	Lot 14	353206.75	5787256.30	18.787	19.753	1.174	18.579
MW03	Lot 8	352775.73	5786562.05	18.400	19.372	0*	19.372

* Water flowing above top of casing

Groundwater stabilised at 1.4 m bgl in MW01, 1.2 m bgl in MW02 and above the top of well casing in MW03, and therefore the stabilised water level in all three wells is above the screened interval. Based on AECOM's observations during drilling, it is considered that this is due to clay in the unsaturated zone acting as a confining layer and the presence of vertical (upward) gradients. Therefore it is considered that the screen intervals are appropriately set to screen within the water-bearing zone.

Given that the stabilised water level was above the top of casing in MW03, it was not possible to accurately measure the stabilised water level in this well. Therefore, for the purposes of calculating groundwater flow direction, the groundwater elevation in MW03 was assumed to be equal to the top of well casing. Based on the measured standing water levels and this assumption, groundwater was inferred to flow to the north west towards Berwick Town Drain. In the event that the pressure head within MW03 was higher than the assumed elevation, the gradient would be more to the north (as opposed to north west) and steeper. Inferred groundwater elevation contours are presented on **Figure F4**.

It should be noted that the groundwater contour map and inferred flow direction do not take into account the potential for vertical gradients to be present. If there is a strong vertical gradient (which appears to be the case given that stabilised water levels are higher than the water levels encountered during drilling), then the groundwater head would be expected to vary with elevation and would therefore be dependent on the screened interval.

Based on AECOM's observations during drilling, it is considered that the aquifer is semi-confined and that the screens are set appropriately for the water-bearing zone. Further, AECOM considers that the well construction is appropriate for the interception of light non-aqueous phase liquid (LNAPL), if present, and notes that there were no field observations during drilling, or analytical results, that would suggest the potential presence of LNAPL.

9.4.3 Groundwater Field Parameters

Field parameters measured during groundwater purging and sampling are provided on field sampling sheets attached in **Appendix M**. Stabilised groundwater parameters are provided in **Table T3** and summarised below.

- Field measured pH ranged from 6.1 (MW01) to 6.5 (MW02).
- Field measured electrical conductivity (EC) ranged from approximately 5 600 µS/cm (MW03) to approximately 6 500 µS/cm (MW01). Based on an EC to TDS conversion factor of 0.67, field measured TDS ranged from approximately 3 700 mg/L to approximately 4 300 mg/L.
- Field measured groundwater temperature was approximately 15^{o}C.
- Field measured dissolved oxygen ranged from approximately 0.4 mg/L (MW03) to 5.9 mg/L (MW01).
- Field measured redox ranged from approximately 140 mV (MW03) to 200 mV (MW01).

Groundwater Analytical Results

Groundwater analytical results are tabulated and compared to the adopted groundwater quality objectives in **Table T4**.

Laboratory-measured TDS ranged from 4 000 – 4 500 mg/L. Based on the laboratory analysed TDS, groundwater at the Site is considered to fall within Segment C, in accordance with the SEPP (GoV).

Groundwater samples recorded concentrations of analysed chemicals below the adopted groundwater quality objectives with the exception of the following:

- Copper was reported above the ANZECC (2000) Freshwater Ecosystems (95% protection) objective of 0.0014 mg/L in MW01 and MW02.
- Manganese was reported above the NHMRC ADWG (2004) aesthetic objective, which was adopted for the Primary Contact Recreation beneficial use in the absence of an ANZECC (2000) PCR objective, in MW01.
- Nickel was reported above the ANZECC (2000) Freshwater Ecosystems (95% protection) objective of 0.011 mg/L in all three wells.
- Zinc was reported above the ANZECC (2000) Freshwater Ecosystems (95% protection) objective of 0.008 mg/L in all three wells.
- Nitrate (as nitrogen) was reported at 12 mg/L in MW02, which is above the ANZECC (2000) Guideline for Recreational Water Quality and Aesthetics of 10 mg/L.

With respect to the above data, AECOM notes the following:

- Concentrations of copper, nickel and zinc are considered to be consistent with background/regional concentrations.
- Manganese exceeded the NHMRC ADWG (2004) aesthetic objective (adopted for PCR) in one well, but did not exceed the NHMRC ADWG (2004) health objective. Given that this is an aesthetic rather than health guideline for drinking water, it is considered that the primary contact recreation beneficial use is not precluded by manganese at MW01.
- The nitrate concentration reported at MW02 (located on lot 14) is considered to be higher than background/regional concentrations. Based on the location of the well (inferred upgradient end of the Site but downgradient from Centaflora Nursery at 373-375 Centre Road), it is considered that historical activities at lot 14 and/or lot 15 may have contributed to the elevated nitrate reported at MW02. It is noted that a component of the elevated nitrate may also be derived from upgradient of the Site. The nitrate concentration at MW01 (inferred downgradient) is below the adopted beneficial use criteria, which indicates attenuation of nitrate is likely to be occurring.

10.0 Conclusions and Recommendations

10.1 Conclusions

Based on the results of the Preliminary Desktop Review and Targeted Geotechnical and Environmental Soil Assessment, the following conclusions are made:

10.1.1 Desktop Assessment

- Based on the preliminary desktop review and Site inspection, the following potential contaminating activities and contaminants of potential concern were identified:
  - Storage and use of pesticides (particularly OCPs) associated with agricultural and horticultural activities.
  - Importation of potentially contaminated fill (metals, TPH, PAHs)
  - Livestock burials (nitrate, ammonia, biological hazards)
  - Waste burials, including potential burial of hazardous materials such as asbestos.
  - Septic tanks (nitrate, ammonia, biological hazards)
- Stockpiled fill with various building rubble such as concrete, bricks, timber and plastic was observed on Lots 11, 20, 25 and 27. This is considered potentially detrimental to the aesthetics beneficial use at the Site.
- AECOM did not have access permission for all 29 lots at the time of this assessment. As a result, it was not possible to undertake a full review of Site use and history, which would normally include a Site inspection and interview with Site users. In particular, nursery businesses at lots 15 and 19 were not inspected and may warrant further investigation.

10.1.2 Soil Contamination Assessment

- No elevated PID readings or olfactory/visual observations that may have indicated the presence of contamination were recorded during the soil sampling program.
- The analysed soil samples reported concentrations below the adopted human health and ecosystems beneficial use objectives for the chemicals analysed. The following limitations should be noted with respect to soil analytical results:
  - AECOM was appointed by GAA to obtain samples from 18 targeted locations, which is less than the number of sampling locations recommended in AS4482-1 (2005) for a site of approximately 83 ha. However, based on information provided by GAA, obtained by AECOM during the desktop assessment and that observed during the Site walkover, the sampling locations targeted likely areas of potential impact to near surface soils on properties where AECOM was granted access permission.
  - AECOM collected a total of 10 samples from selected stockpiles, which is less than the number of samples specified in EPA Victoria Publication 702. Further stockpile classification would be required prior to off-Site disposal.

10.1.3 Acid Sulphate Soils

- Field pH testing indicated that PASS may be present in six of the eight samples analysed. Therefore should clay soil at the Site be disturbed or exposed by excavation or construction activity, there is the potential that acid may be generated.
- S_{CR} and SPOCAS analysis reported an average net acidity of 0.06 %S in seven samples analysed. In accordance with EPA Victoria Publication 655.1, it is concluded that the soils represented by the analysed samples have the potential to generate acid. In addition, the average net acidity is above the net acidity criteria specified in QNRM (2002) of 0.03 %S for heavy clays and silty clays > 1000 tonnes. Therefore the material represented by AECOM's samples is classified as ASS. The following limitations should be noted with respect to ASS analytical results:
  - Where potential acidity was reported below the laboratory detection limit it was conservatively assumed that the potential acidity of the sample was equal to the detection limit for the purposes of calculating net acidity. This conservatism is carried through the acidity calculations and therefore the average net acidity of 0.06 %S is considered to be a conservative estimate.

- It should also be noted that the total number of samples analysed is less that that specified in Table 1 of EPA Victoria Publication 655.1 (*i.e.* 2 boreholes per ha for sites larger than 4 ha, equivalent to 166 samples for an 83 ha site). In addition, limited vertical sampling coverage has been achieved by the sampling undertaken to date. Therefore further investigation may reduce the total volume of soil requiring treatment.

- Based on the "Theme 2 Wetland Fingers to Reduce Fill" Drainage Plan provided by GAA, approximately 170 000 m^3 (in-situ) of soil may be disturbed as part of wetland construction. Based on an assumed average bulk density of 1.8 for clay, up to 306 000 tonnes of ASS may need to be treated to ensure neutralisation. This assumes that all soil requiring disturbance at the Site is classified as ASS.
- The calculated liming rate required to neutralise 306 000 tonnes of ASS at the Site is 2.8 kg per tonne. Applying this rate to the entire soil mass, approximately 850 tonnes of lime would be required to neutralise all ASS at the Site. However, it is noted that liming rates are calculated on a dry mass basis and therefore the mass of soil used in this calculation is a conservative estimate, and less lime is likely to be required in practice.
- The risk category associated with ASS at the Site can be defined as Extra High Treatment (category XH) in accordance with DNRM (2002).

10.1.4 Geotechnical Investigation

The conclusions of the geotechnical investigation are summarised below. They should be read in conjunction with the full geotechnical report in **Appendix A**.

- pH in soil samples ranged from 5.2-7.2 and sulphate ranged from 60-270 mg/kg. Based on these results, soil is considered to be "non-aggressive" in accordance with AS 2159-2009 *Piling – Design and Installation*. However, results of the ASS investigation should be taken into account when designing concrete footings and subsurface structures.
- Laboratory Californian Bearing Ration (CBR) testing undertaken on the clay residual soils resulted in CBR values of 3.5% and 6.0%.
- CBR tests undertaken indicated the optimum moisture content (OMC) of the residual clay soils to be approximately 24% to 29%. Moisture content tests on samples across the site gave a range of field moisture contents between 18% and 38%, suggesting that at the time of the fieldwork the residual soils had a natural moisture content varying from lower to higher than the OMC.
- Excavations for shallow footings and pipeline trenches are likely to comprise predominately alluvial clay soils.
- Atterberg Limit tests undertaken on clay soils at site indicate a Plasticity Index (PI) ranging between 63% and 76%. PI values of this range are typically characteristic of highly reactive soils.
- Due to the low strength and high reactivity of soils it is unlikely that shallow pad or strip footings would be suitable. It is anticipated that a stiffened raft will be suitable for structures at the Site.
- The results of the dispersion testing indicated that the material is typically non-dispersive (Emerson Class 6 to 8), although one test result returned as highly dispersive (Emerson Class 2).

10.1.5 Groundwater Investigation

- Groundwater was encountered within brown clay at approximately 8-9 m bgl in MW01 and MW03 and at approximately 5.5 m bgl in MW02. In all wells, groundwater stabilised at a higher elevation, indicating that groundwater at the Site may be semi-confined.
- Based on the measured standing water levels, groundwater was inferred to flow to the north west. This groundwater flow direction is based on the assumption that the groundwater head in MW03 is equal to the top of casing elevation, and does not take into account the potential presence vertical groundwater gradients.
- No odours or other evidence of contamination (e.g. sheen) were noted during well installation and groundwater sampling.
- Laboratory-measured TDS ranged from 4 000 – 4 500 mg/L. Based on the laboratory analysed TDS, groundwater at the Site is considered to fall within Segment C, in accordance with the SEPP (GoV).

- Groundwater samples recorded concentrations of analysed chemicals below the adopted groundwater quality objectives with the exception of individual metals (copper, manganese, nickel, zinc) and nitrate.
    - Copper, nickel and zinc are considered to be consistent with regional/background concentrations and therefore are not considered to represent pollution.
    - Manganese exceeds the ADWG drinking water aesthetic value only and is therefore not considered to preclude the primary contact recreation beneficial use.
    - The nitrate concentration at MW02 (12 mg/L) is above the guideline value of 10 mg/L for the primary contact recreation beneficial use. It is noted that nitrate was not reported in elevated concentrations in the inferred downgradient well (MW01) and that attenuation is likely to be occurring. Further evaluation of nitrate concentrations in groundwater around MW02 may be required depending upon the likelihood that the primary contact recreational use will actually be realised on Site.

10.2 Recommendations

Based on the conclusions of the Preliminary Desktop Review and Targeted Geotechnical and Environmental Soil Assessment, the following recommendations are made:

10.2.1 Desktop Assessment

- It is recommended that, prior to finalisation of the PSP, further investigation is undertaken at nursery businesses at lots 15 and 19, which were not inspected as part of this investigation, with a focus on potentially contaminating activities,.
- In accordance with Minister's Direction No. 1, horticultural land use is not specifically defined as "potentially contaminated land". Therefore an Environmental Audit, in accordance with Part 9D of the Environment Protection Act (1970) may not be required. However, given that it is unknown whether chemical storage or waste disposal has historically occurred at these lots, further environmental investigation to assess the suitability of the Site for the proposed use is recommended prior to a sensitive use commencing at these lots.

10.2.2 Soil Contamination Assessment

- Stockpiled building rubble on Lot 27 and anthropogenic material within stockpiled soil on other lots should be removed from the Site.
- Further stockpile sampling in accordance with EPA Publication 702 should be undertaken to assess whether soil stockpiles on Lots 11, 20, 25 and 27 (and other stockpiles if discovered) are suitable to remain on-Site. If stockpiles are to be reused on-Site, all anthropogenic material should be separated from the stockpiles and disposed of appropriately. In the event that stockpiled soil is removed from the Site, transport and disposal should be undertaken in accordance with EPA Publication 621 and EPA waste transport protocols.
- Further environmental investigation, including Site inspection and soil sampling, should be undertaken on Lots 15 and 19, which are currently occupied by nursery businesses, prior to determination of their suitability for residential land use. The requirements of Minister's Direction No. 1 (Potentially Contaminated Land) will need to be taken into account for Lots 15 and 19 with respect to the change to a more sensitive land use, including the potential need for an environmental audit to be undertaken either before an amendment to the planning scheme to allow a sensitive land use, or before a sensitive land use commences.
- Septic tanks should be emptied, decommissioned and removed where possible as part of the redevelopment works.

10.2.3 Acid Sulphate Soil Assessment

- Further ASS sampling should be undertaken to support the existing results and to reduce uncertainty regarding the volume of ASS at the Site. ASS sampling should be undertaken in accordance with Victorian EPA Publication 655.1.

  It is recommended that, in accordance with EPA Publication 655.1, prior to earthworks commencing, the proposed works are discussed with EPA before an Environmental Management Plan (EMP) is prepared and submitted to EPA for approval. The EMP would take into consideration the management strategy and monitoring requirements to ensure that the proposed treatment will not impact on land, surface water and groundwater. In particular, the disturbance should be staged so that the potential effects on any one area

are limited and more easily managed. The EMP should include details pertaining to the management of potential acid sulphate soils contacted during the earthworks.

- The following should be taken into consideration when designing the wetland:
  - While disturbed or exposed clay soil at the Site has the potential to generate acid, it should be noted that in areas of the wetland designed to be continually submerged, the natural clay material would not be expected to be exposed to oxygen and therefore acid is unlikely to be generated.
  - In areas of the wetland not designed to be continually submerged, or areas where incidental exposure of the soil to oxygen may occur, treatment and/or management may be required. This could include lime mixing as described in **Section 10.1.3**, or the installation of an engineered capping layer to minimise exposure to oxygen. It is noted that wetlands located to the south of the Site are likely to have been constructed in similar geology with similar acid sulphate generating potential. Consideration of operating experience with the existing wetlands should be taken into account when developing the management plan for the potential acid sulphate soils.

10.2.4 Geotechnical Investigation

The recommendations of the geotechnical investigation are summarised below. They should be read in conjunction with the full geotechnical report in **Appendix A**. At the time of this investigation the information provided to AECOM regarding the configuration and design details of the wetland and proposed residential development was limited and, as such, the following recommendations are general in nature. Requirements for additional geotechnical site investigation and the recommendations given below should be reviewed following finalisation of the proposed development design.

Excavation Conditions

- Standard excavation equipment, such as a back hoe or excavator, should be suitable for excavation of shallow alluvial soils.

Slopes and Retaining Structures

- Assuming that the majority of excavations at the Site will be temporary (short term) excavations such as those for shallow spread/raft footings or buried services, trench excavations deeper than 1.2m or otherwise containing very soft/soft, loose, wet or unstable materials should be battered, benched or have appropriate shoring provided.
- Temporary batter slopes may be used for shallow excavations at the Site. A maximum slope grade of 1H:1V is recommended for temporary excavations, up to a depth of 3 m, within the firm to stiff alluvial clay soils.
- Construction of any unsupported temporary slope greater than 3 m in height will need to be assessed by a geotechnical engineer on a case by case basis. Where battered slopes are not practical, temporary support such as shoring or trench shields may be suitable. Further advice should be sought, once excavation details and methods have been finalised, should these be required.
- If permanent cut slopes or excavations are required they should be adequately battered or retained. Batters for permanent excavations up to 3 m in height/depth should not exceed 3H:1V in the firm to stiff alluvial clay soils.
- If permanent retaining structures are required design will need to be carried out by a suitably qualified engineer.

AS270 Site Classification

- Based on the high PI results and the Site Classification recommendations for an ‘Alluvial Clay Soil’ in Table D1, Australian Standard AS2870-1996 “Residential Slabs and Footings – Construction”, it is recommended that the Site is classified as Class ‘H’.
- Following finalisation of the design and layout it is recommend that further investigation and testing is undertaken to confirm this classification.
- Engineered filling of the site with inert (non-reactive) fill materials to depths greater than 0.8m may reduce the Site Classification.
- Site classification is based on the Site conditions at the time of investigation. Site classification may need to be reconsidered if significant (*i.e.* >0.4m) of filling is carried out on-Site.

Soft Landscaping

- Soft landscaping should take into consideration the effects of new tree plantings and vegetation removal on proposed and existing structures. In particular, tree planting should be restricted to a distance greater than the mature height of the trees away from the existing or proposed structures.

Building Footings

- At the time of this investigation the form of the proposed structures for the development were not known. However, due to the high reactivity of soils it is unlikely that shallow pad or strip footings would be suitable. It is anticipated that a stiffened raft will be suitable for structures at the Site.
- Based on the results of the field investigation and assuming the proposed structures are low level buildings, founding on the clay soils with stiff or better consistency, an allowable bearing pressure of 100kPa may be adopted.
- Footing excavations should be inspected by a geotechnical engineer during construction to ensure that foundation conditions are consistent with those on which design recommendations are based.
- Because of the high reactivity of soils at the Site, service trenches beneath footings should be minimised and where used should be backfilled with compacted low permeability material to reduce water migration and ponding. All surface water should be controlled and diverted away from buildings.
- It is not expected that pile footings will be an economical solution for the low-rise residential structures anticipated for the site. However, it is understood that forms of commercial structures may be proposed for the Site and, depending on the loading conditions, a piled solution may be appropriate. Heavily loaded structures will likely need to be founded on piles that extend into the underlying Silurian rock (or other suitable material). Should pile footings be considered, additional geotechnical investigation and advice will be required.

Reuse of Site Material as General Fill

- The alluvial clay materials present at the Site may be used as general fill in areas that are not settlement sensitive only. Due to the moisture sensitivity, the untreated alluvial clay materials are generally considered unsuitable for use as engineered fill. However, the alluvial clay may be treated by addition of lime to reduce moisture sensitivity, reactivity and thereby improve the suitability of the soils for use as both general and engineered fill. Alternatively, structures and pavements may be designed to account for the moisture sensitivity of the untreated alluvial clay, although this is unlikely to be an economical solution.
- If soils on-Site already require treatment with lime due to the PASS (refer **Section 10.1.3**), a cost effective solution may be to ensure that the liming volumes are sufficient to both mitigate PASS and reduce moisture sensitivity. If liming rates are adequate, excavated alluvial clay materials could be used at the Site as engineered fill.
- The soil liming rate and volume should be determined in accordance with VicRoads Code of Practice RC500.23 and Specification 290. Typically lime volumes to adequately reduce moisture sensitivity are between 3 and 5%. A possible construction sequence for areas of lime treated alluvial clay fill is as follows:

    1) Strip topsoil and unsuitable materials off fill areas and proof roll.
    2) Progressively excavate waterway.
    3) Spread single layer of excavated material (up to 300mm thick) across areas of fill.
    4) Mix lime into layer using appropriate plant and/or equipment.
    5) Compact treated layer and repeat steps 3 to 5 until necessary level is achieved.

The impact of increased lime concentrations in the surficial soils on future landscaping works, flora and fauna may need to be considered.

Suitability of Site Materials for Use as a Clay Liner for Wetlands

- Typically permeability of clay materials used in lagoon liners is approximately $k=10^{-9}$ m/s. This is likely to be achievable with the alluvial high plasticity clay material at site (subject to testing). The in-situ permeability of the alluvial clays is also likely to be very low, although the presence of any minor silt/sand lenses or partings

could locally increase this significantly. It is recommended that the subgrade of any clay liner be scarified, moisture conditioned and re-compacted before placing the liner.

- Some cracking of the clay liner is likely to occur on drying due to shrinkage of the high plasticity clays. This may be mitigated by providing surface cover, such as thick soil and topsoil cover (for example, 0.5m), to reduce evaporation and moisture change or by maintaining the wetlands in a wet condition, if required.
- While the results of the dispersion testing indicated that the material is typically non-dispersive, one test result returned as highly dispersive. Should the dispersivity of the clay soils be important to the operation of the wetlands, further dispersion testing should be undertaken. Lime may be used to reduce the dispersive characteristics.
- It should be noted that addition of lime to clay can increase the permeability and chemical properties (such as pH) of the soil. This should be considered during wetland and clay liner design if lime treated soils are to be incorporated

Pavement Design

- Based on the laboratory Californian Bearing Ratio testing undertaken on the clay residual soils, a CBR value of 3% may be adopted for pavement design.
- In accordance with VicRoads Code of Practice RC 500.22 the alluvial clay soils onsite are classified as expansive and as such will require a minimum cover to the top of pavement. Refer to VicRoads Code of Practice RC 500.22 Figure 5.1 for minimum cover requirements.

Subgrade Preparation

- Materials may require moisture conditioning during the subgrade preparation process.
- Although no information is available about the proposed development layout, the following general subgrade preparation procedures are recommended:
  - Areas on which fill is to be placed should be stripped of any topsoil materials and soils containing organic material including roots and stockpiled separately on site. Stripping depths are expected to range between approximately 50mm to 200mm.
  - Box out the subgrade, where required, to the specified design subgrade level and compact the subgrade material to a minimum dry density ratio of 98% Standard using a vibrating pad/sheep's foot roller of at least 10 tonnes static mass. The exposed subgrade should be moisture conditioned to within -3% to +1% of Optimum Moisture Content (OMC) and compacted over a depth of 300mm in accordance with AS3798 – 2007 section 5.2.
  - The prepared subgrade should be test rolled using suitable plant in accordance with AS3798 – 2007 section 5.5. Test rolling should be undertaken to ensure that the subgrade is capable of withstanding the applied loading without visible deformation or springing. Test rolling should be undertaken in the presence of a suitably qualified geotechnical engineer. If soft areas are identified during test rolling the areas should be removed and replaced with suitable select fill and re-compacted. The select fill should be placed in horizontal layers no greater than 200mm loose thickness.

- Where lime stabilisation is utilised to improve the acceptable design CBR value compaction of the subgrade is to be undertaken following the lime mixing process. Test rolling is still required following lime stabilisation.
- Where a capping layer is utilised to improve the acceptable design CBR value the fill material should be placed in horizontal layers no greater than 200mm loose thickness. Test rolling is required following placement of the capping layer.
- It is recommended that the subgrade preparation should be carried out during dry weather conditions wherever possible. Provision for the effective drainage of surface water from the subgrade should be made by means such as temporary drains or pumping equipment.
- It is recommended that subgrade preparation and earthworks at proposed building locations should be carried out under Level 1 supervision as defined in AS3798 – 2003.

10.2.5 Groundwater Assessment

Further assessment of groundwater in the vicinity of MW02 may be required to assess whether the primary contact recreation beneficial use is precluded by nitrate in this area.

11.0 References

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Tables

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Lot number	Street address			Title details		Zoning	Overlays	Apprpoximate Site Area (ha)
	Number	Street	Suburb					
1	187	Golf Links Road	Berwick 3806	Lot A PS430080	Vol 10532/Fol 835	Public Use Zone - Service & Utility	Development Plan Overlay Land Subject to Inundation Overlay	6.0
2	322W-340W	Centre Road	Berwick 3806	Lot Res1 PS336088	Vol 10214/Fol 176	Public Use Zone - Service & Utility	Development Plan Overlay Land Subject to Inundation Overlay	2.9
3	342-350	Centre Road	Berwick 3806	Lot 1 PS314788	Vol 10162/Fol 787	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	3.0
4	352-356	Centre Road	Berwick 3806	Lot 1 PS338577	Vol 10220/Fol 398	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	2.0
5	358-364	Centre Road	Berwick 3806	Lot A PS437692	Vol 10595/Fol 500	Rural Living Zone - Schedule 2	Development Plan Overlay	2.8
6	335-347	Centre Road	Berwick 3806	Lot 1 TP748354	Vol 8874/Fol 930	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	4.9
7	136-138	Homestead Road	Berwick 3806	Lot 16 LP52810	Vol 8945/Fol 786	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	2.6
8	137	Homestead Road	Berwick 3806	Crown Land: Allot. 21 Sec. 4 Parish of Berwick; Parcel identifier 21~4\PP2131	Vol 9455/Fol 598	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	11
9	349-351	Centre Road	Berwick 3806	Lot 1 TP213106	Vol 10104/Fol 059	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	2.5
10	353-355	Centre Road	Berwick 3806	Lot 13 LP52810	Vol 11117/Fol 658	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	2.5
11	357-359	Centre Road	Berwick 3806	Lot 11 LP52810	Vol 10939/Fol 946	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	1.9
12	361-363	Centre Road	Berwick 3806	Lot 9 LP52810	Vol 8481/Fol 689	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	1.9
13	365-367	Centre Road	Berwick 3806	Lot 7 LP52810	Vol 8481/Fol 690	Rural Living Zone - Schedule 2	Development Plan Overlay	1.9
14	369-371	Centre Road	Berwick 3806	Lot 5 LP52810	Vol 8600/Fol 978	Rural Living Zone - Schedule 2	Development Plan Overlay	2.1
15	373-375	Centre Road	Berwick 3806	Lot 3 LP52810	Vol 8341/Fol 266	Rural Living Zone - Schedule 2	Development Plan Overlay	2.1
16	132	Homestead Road	Berwick 3806	Lot 14 LP52810	Vol 9004/Fol 508	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	2.6
17	124-128	Homestead Road	Berwick 3806	Lot 12 LP52810	Vol 8481/Fol 688	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	1.9
18	118-122	Homestead Road	Berwick 3806	Lot 10 LP52810	Vol 8481/Fol 687	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	1.9
19	112-116	Homestead Road	Berwick 3806	Lot 8 LP52810	Vol 8527/Fol 362	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	1.9

Lot number	Street address			Title details		Zoning	Overlays	Apprpoximate Site Area (ha)
	Number	Street	Suburb					
20	106-110	Homestead Road	Berwick 3806	Lot 6 LP52810	Vol 8552/Fol 568	Rural Living Zone - Schedule 2	Development Plan Overlay	2.1
21	100-104	Homestead Road	Berwick 3806	Lot 4 LP52810	Vol 8519/Fol 196	Rural Living Zone - Schedule 2	Development Plan Overlay	2.1
22	94-98	Homestead Road	Berwick 3806	Lot 1 TP85701	Vol 9505/Fol 982	Rural Living Zone - Schedule 2	Development Plan Overlay	2.1
23	125	Homestead Road	Berwick 3806	Lot 1 PS323945	Vol 10124/Fol 981	Rural Living Zone - Schedule 2	Development Plan Overlay	2.0
24	117-123	Homestead Road	Berwick 3806	Lot 2 PS323945	Vol 10124/Fol 982	Rural Living Zone - Schedule 2	Development Plan Overlay	2.0
25	109-115	Homestead Road	Berwick 3806	Lot 3 PS323945	Vol 10124/Fol 983	Rural Living Zone - Schedule 2	Development Plan Overlay	2.0
26	1	Ward Road	Berwick 3806	Lot 4 PS323945	Vol 10124/Fol 984	Rural Living Zone - Schedule 2	Development Plan Overlay	3.2
27	322-340	Centre Road	Berwick 3806	Lot 1 PS336088	Vol 10828/Fol 441	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	4.1
28	340l	Centre Road	Berwick 3806	Lot Res1 PS314788	Vol 10162/Fol 789	Rural Living Zone - Schedule 2	Development Plan Overlay Land Subject to Inundation Overlay	0.14
29	101-107	Homestead Road	Berwick 3806	Lot Res1 PS323945	Vol 10125/Fol 786	Rural Living Zone - Schedule 2	Development Plan Overlay	2.0

Field_ID								SP01	TP05_0.5-0.55	TP06_0.05-0.10	TP07_0.50-0.55	SP10	TP11_0.50-0.55	SP13	TP22_0.5-0.7	TP24_0.5-0.6	TP25_0.1-0.2	TP25_0.5-0.6	SP30	SP31
Sampled Date								26/05/2010	26/05/2010	26/05/2010	26/05/2010	26/05/2010	26/05/2010	26/05/2010	28/05/2010	28/05/2010	28/05/2010	28/05/2010	28/05/2010	28/05/2010
Chem_Group	**ChemName**	**Units**	**EQL**	***Maintenance of Ecosystems***	**Sensitive Use - Other**	**Recreation/Open Space**	**Commercial/Industrial**													
Metals	Arsenic	mg/kg	2	*20*	**100**	200	500	4.3	<2	<2	3.2	<2	<2	2.7	-	3.5	<2	-	2.4	<2
	Cadmium	mg/kg	0.5	*3*	**20**	40	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5
	Chromium (hexavalent)	mg/kg	0.5	*1*	**100**	200	500	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	-
	Chromium (III+VI)	mg/kg	5	*400*	**120000**			-	23	14	29	-	-	23	-	27	41	-	17	10
	Cobalt	mg/kg	5		**100**	200	500	13	6.5	-	-	<5	14	-	-	-	-	-	-	-
	Copper	mg/kg	5	*100*	**1000**	2000	5000	22	11	6.1	<5	<5	8.9	17	-	8.3	17	-	8.6	9.2
	Lead	mg/kg	5	*600*	**300**	600	1500	37	9.6	5.4	6.4	7.2	9.9	16	-	8.3	9.3	-	7.4	<5
	Mercury	mg/kg	0.1	*1*	**15**	30	75	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Molybdenum	mg/kg	2					<10	<10	<10	<10	<10	<10	<10	-	<10	<10	-	<10	<10
	Nickel	mg/kg	2	*60*	**600**	600	3000	29	10	9.6	5.8	<5	30	8	-	5.2	14	-	5.6	5.8
	Selenium	mg/kg	2					<2	<2	<2	<2	<2	<2	<2	-	<2	<2	-	<2	<2
	Silver	mg/kg	2					-	<5	<5	<5	-	-	<5	-	<5	<5	-	<5	<5
	Tin	mg/kg	5					<10	<10	<10	<10	<10	<10	<10	-	<10	<10	-	<10	<10
	Zinc	mg/kg	5	*200*	**7000**	14000	35000	45	5.4	8	5.1	<5	8.6	130	-	<5	11	-	13	5.9
Inorganics	Cyanide Total	mg/kg	1		**500**	1000	2500	-	<5	<5	<5	-	-	<5	-	<5	-	-	-	-
	Fluoride	mg/kg	40					-	120	130	200	-	-	160	-	570	-	-	-	-
	Moisture Content (dried @ 103°C)	%	0.1					14	26	10	10	17	20	30	27	19	24	21	14	8
	pH (aqueous extract)	pH_Units	0.1					-	6.8	6.7	7.1	-	-	6.8	-	6.4	-	-	-	-
TPH	TPH C6 - C9	mg/kg	10		**30**	30	320	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	-	<20	<20
	TPH C10 - C14	mg/kg	50		**150**	150	260	<50	<50	<50	<50	<50	<50	<50	-	<50	<50	-	<50	<50
	TPH C15 - C28	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	-	<100	<100	-	<100	<100
	TPH C29-C36	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	-	<100	<100	-	<100	<100
	TPH+C15 - C36 (Sum of total)	mg/kg	200		**300**	300	1700	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	-	<200	<200
	TPH+C10 - C36 (Sum of total)	mg/kg	50					<250	<250	<250	<250	<250	<250	<250	-	<250	<250	-	<250	<250
Organochlorine Pesticides	4,4-DDE	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	a-BHC	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Aldrin	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Aldrin + Dieldrin	mg/kg	0.03		**10**	20	50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	b-BHC	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	chlordane	mg/kg	0.03		**50**	100	250	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Chlordane (cis)	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlordane (trans)	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
	d-BHC	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	DDD	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	DDT	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	DDT+DDE+DDD	mg/kg	0.05		**200**	400	1000	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	-	<0.15	<0.15
	Dieldrin	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endosulfan I	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endosulfan II	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endosulfan sulphate	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endrin	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endrin aldehyde	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Endrin ketone	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	g-BHC (Lindane)	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Heptachlor	mg/kg	0.03		**10**	20	50	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Heptachlor epoxide	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Methoxychlor	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Toxaphene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Organochlorine pesticides EPA448	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
	Other organochlorine pesticides EPA448	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
Organophosphorous Pesticides	Azinophos methyl	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Bolstar (Sulprofos)	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Chlorpyrifos	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Demeton-O	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Diazinon	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Dichlorvos	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Disulfoton	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Ethion	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Ethoprop	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Fenitrothion	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Fensulfothion	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Fenthion	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Merphos	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Methyl parathion	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Mevinphos (Phosdrin)	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Naled (Dibrom)	mg/kg	0.5					<0.5	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	<0.5	<0.5
	Phorate	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Prothiofos	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Ronnel	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
	Trichloronate	mg/kg	0.2					<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2
Herbicides	Dinoseb	mg/kg	5					-	-	-	-	-	-	-	-	-	-	-	-	-
PAH/Phenols	2,4-dimethylphenol	mg/kg	0.2					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	2,4-dinitrophenol	mg/kg	5					-	-	-	-	-	-	-	-	-	-	-	-	-
	2-methylphenol	mg/kg	0.2					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	2-nitrophenol	mg/kg	0.5					-	<0.5	<0.5	<0.5	-	-	<0.5	-	<0.5	-	-	-	-
	3-&4-methylphenol	mg/kg	0.4					-	<0.4	<0.4	<0.4	-	-	<0.4	-	<0.4	-	-	-	-
	4,6-Dinitro-2-methylphenol	mg/kg	5					-	-	-	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	mg/kg	0.03					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	4-nitrophenol	mg/kg	5					-	-	-	-	-	-	-	-	-	-	-	-	-
	4,6-Dinitro-o-cyclohexyl phenol	mg/kg	5					-	-	-	-	-	-	-	-	-	-	-	-	-
	Acenaphthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Acenaphthylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Benz(a)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Benzo(a) pyrene	mg/kg	0.1		**1**	2	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Benzo(b)&(k)fluoranthene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-
	Benzo(b)fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Benzo(g,h,i)perylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Benzo(k)fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Chrysene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Dibenz(a,h)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Fluorene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Naphthalene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	PAHs (Sum of total)	mg/kg	0.1		**20**	40	100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Phenanthrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Phenol	mg/kg	0.2		**8500**	17000	42500	-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	Pyrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1
	Phenols (non-halogenated) EPA448	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Phenols(halogenated) EPA448	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
	Polycylic aromatic hydrocarbons EPA448	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-
Halogenated Phenols	2,3,5,6-Tetrachlorophenol	mg/kg	0.03					-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	mg/kg	0.05					-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,6-trichlorophenol	mg/kg	0.05					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	2,4-dichlorophenol	mg/kg	0.03					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	2,6-dichlorophenol	mg/kg	0.03					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	2.3.4.5 & 2.3.4.6-Tetrachlorophenol	mg/kg	0.05					-	-	-	-	-	-	-	-	-	-	-	-	-
	2-chlorophenol	mg/kg	0.03					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	Pentachlorophenol	mg/kg	0.2					-	<0.5	<0.5	<0.5	-	-	<0.5	-	<0.5	-	-	-	-
Polychlorinated Biphenyls	Arochlor 1016	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1221	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1232	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1242	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1248	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1254	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Arochlor 1260	mg/kg	0.1					-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	PCBs (Sum of total)	mg/kg	0.1		**10**	20	50	-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
BTEX	Benzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Ethylbenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Toluene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-
	Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-
	Xylene Total	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
MAH	Styrene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Monocylic aromatic hydrocarbons EPA448	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorinated Hydrocarbons	1,1,1,2-tetrachloroethane	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,1,1-trichloroethane	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,1,2,2-tetrachloroethane	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,1,2-trichloroethane	mg/kg	0.04					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,1-dichloroethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,1-dichloroethene	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2,3-trichloropropane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2-dichloroethane	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2-Dichloroethene	mg/kg						-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	1,2-dichloropropane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,3-dichloropropane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,3-Dichloropropene	mg/kg						-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-	-
	Benzal Chloride	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Benzotrichloride	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Benzyl chloride	mg/kg	0.2					-	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	-	-	-	-
	Bromodichloromethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Bromoform	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Carbon tetrachloride	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Chlorodibromomethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Chloroform	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	cis-1,2-dichloroethene	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	cis-1,3-dichloropropene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Dibromomethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Dichloromethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Hexachlorobutadiene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Hexachlorocyclopentadiene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Hexachloroethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Trichloroethene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Tetrachloroethene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	trans-1,2-dichloroethene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	trans-1,3-dichloropropene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Vinyl chloride	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Other chlorinated hydrocarbons EPA448	mg/kg	0.01					-	-	-	-	-	-	-	-	-	-	-	-	-
Halogenated Benzenes	1,2,3,4-tetrachlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2,3,5-Tetrachlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2,3-trichlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2,4,5-tetrachlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2,4-trichlorobenzene	mg/kg	0.01					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,2-dichlorobenzene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,3,5-Trichlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,3-dichlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	1,4-dichlorobenzene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Chlorobenzene	mg/kg	0.02					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Hexachlorobenzene	mg/kg	0.03					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
	Pentachlorobenzene	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
Halogenated Hydrocarbons	1,2-dibromoethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Bromomethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Chloromethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Iodomethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-
	Trichlorofluoromethane	mg/kg	0.05					-	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	-	-	-	-

Bore ID	Date of Measurement	pH	Conductivity (µS/cm)	TDS (mg/L) *	Temperature (°C)	DO (mg/L)	Redox (mV)	Observations
MW01	16-Jul-10	6.05	6450	4322	14.7	5.9	195	
MW02	16-Jul-10	6.51	6290	4214	14.9	5.1	155	
MW03	16-Jul-10	6.19	5560	3725	15.3	0.4	143	

* TDS was calculated from stabilised field measured EC. Formula: EC*0.67 = TDS

Field_ID	MW01	MW02	MW03	QC200	QC201	QC202
LocCode	MW01	MW02	MW03	QC200	QC201	QC202
Sampled_Date-T	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010

Chem_Group	ChemName	Units	EQL	Agriculture, Parks and Gardens Guidelines	*ANZECC (2000) Primary Contact Recreation*	ANZECC (2000) Stock Watering	Maintenance of Fresh Water Ecosytem (Slightly to Moderately Dist						
Metals	Arsenic	mg/L	0.001	0.1	*0.05*	0.5	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Beryllium	mg/L	0.001	0.1			0.00013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Boron	mg/L	0.05	0.5	*1*	5	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Cadmium	mg/L	0.0001	0.01	*0.005*	0.01	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002
	Chromium (hexavalent)	mg/L	0.001				0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001
	Chromium (III+VI)	mg/L	0.001	1	*0.05*	1		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	0.2	*1*	0.4	0.0014	0.003	0.004	<0.001	0.01	0.002	<0.001
	Lead	mg/L	0.001	0.2	*0.05*	0.1	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.001	2	*0.1*		1.9	0.2	0.06	0.024	0.024	0.024	<0.005
	Mercury	mg/L	0.0001	0.002	*0.001*	0.002	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Molybdenum	mg/L	0.001	0.01		0.15	0.034	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005
	Nickel	mg/L	0.001	0.2	*0.1*	1	0.011	0.02	0.019	0.013	0.013	0.012	<0.001
	Selenium	mg/L	0.001	0.02	*0.01*	0.02	0.005	<0.001	0.001	<0.001	<0.001	<0.01	<0.001
	Silver	mg/L	0.001		*0.05*		0.00005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005
	Tin	mg/L	0.001				0.003	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005
	Vanadium	mg/L	0.005	0.1			0.006	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005
	Zinc	mg/L	0.001	2	*5*	20	0.008	0.056	0.043	0.018	0.024	0.019	<0.001
Inorganics	Alkalinity (Hydroxide) as CaCO3	µg/L	1000					-	-	-	-	<1000	-
	Alkalinity (total) as CaCO3	mg/L	1					-	-	-	-	218	-
	Anions Total	meq/L	0.01					-	-	-	-	61.2	-
	Bicarbonate	mg/L	10					160	300	210	210	-	<10
	Bicarbonate Alkalinity as CaCO3	mg/L	1					-	-	-	-	218	-
	Calcium	mg/L	0.5			1000		160	130	120	120	113	<0.5
	Cations Total	meq/L	0.01					-	-	-	-	62.2	-
	Carbonate Alkalinity-mg CaCO3/L	mg/L	1					<10	<10	<10	<10	<1	<10
	Chloride	mg/L	1		*400*			2500	2300	2100	2100	1970	<5
	Ionic Balance	%	0.01					-	-	-	-	0.84	-
	Magnesium	mg/L	0.5					270	250	170	170	175	<0.5
	Potassium	mg/L	0.5					3.7	1.4	2.9	2.7	2	<0.5
	Sodium	mg/L	0.5		*300*			970	1100	1000	950	967	<0.5
	Sulphate (Filtered)	mg/L	1		*400*	2000		-	-	-	-	63	-
	Sulphate as S	mg/L	5					38	96	23	22	-	<5
	Ammonia as N	µg/L	10				900	<10	<10	<10	<10	80	<10
	Nitrate (as N)	mg/L	0.01		*10*			0.09	12	<0.02	<0.02	<0.01	<0.02
	Nitrite (as N)	mg/L	0.01		*1*			<0.02	0.03	<0.02	<0.02	<0.01	<0.02
	Nitrogen (Total Oxidised)	mg/L	0.01					-	-	-	-	<0.01	-
	Cyanide Total	mg/L	0.004		*0.1*		0.007	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005
	Fluoride	mg/L	0.02	1		2		0.38	0.23	0.36	0.38	0.3	<0.02
	pH (Lab)	pH_Units	0.01					6.7	6.8	6.7	6.7	6.5	7
	TDS	mg/L	5		*1000*			4300	4500	4000	4000	4220	<10
TPH	TPH_C6-C9 ALIPHATIC	µg/L						<13	<13	<13	<13	<10	<13
	TPH+C15 - C36 (Sum of total)	µg/L						<200	<200	<200	<200	<150	<200
	TPH C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50
	TPH C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20
	TPH C15 - C28	µg/L	100					<100	<100	<100	<100	<100	<100
	TPH C29-C36	µg/L	50					<100	<100	<100	<100	<50	<100
	TPH+C10 - C36 (Sum of total)	µg/L	50					<250	<250	<250	<250	<50	<250
Organochlorine Pesticides	4,4-DDE	µg/L	0.1				0.03	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	a-BHC	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	Aldrin	µg/L	0.1		*1*		0.001	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	Aldrin + Dieldrin	µg/L						<0.2	<0.2	<0.2	<0.2	<1	<0.2
	b-BHC	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	chlordane	µg/L	0.5				0.03	<1	<1	<1	<1	-	<1
	Chlordane (cis)	µg/L	0.5					-	-	-	-	<0.5	-
	Chlordane (trans)	µg/L	0.5					-	-	-	-	<0.5	-
	d-BHC	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	DDD	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	DDT	µg/L	0.1		*3*		0.006	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	DDT+DDE+DDD	µg/L						<0.3	<0.3	<0.3	<0.3	<1.5	<0.3
	Dieldrin	µg/L	0.1		*1*		0.01	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	Endosulfan I	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Endosulfan II	µg/L	0.1				0.007	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Endosulfan sulphate	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Endrin	µg/L	0.1		*1*		0.01	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Endrin aldehyde	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Endrin ketone	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	g-BHC (Lindane)	µg/L	0.1		*10*		0.2	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Heptachlor	µg/L	0.1		*3*		0.01	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1
	Heptachlor epoxide	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Methoxychlor	µg/L	0.1				0.005	<0.1	<0.1	<0.1	<0.1	-	<0.1

Field_ID	MW01	MW02	MW03	QC200	QC201	QC202
LocCode	MW01	MW02	MW03	QC200	QC201	QC202
Sampled_Date-T	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010

Chem_Group	ChemName	Units	EQL	Agriculture, Parks and Gardens Guidelines	*ANZECC (2000) Primary Contact Recreation*	ANZECC (2000) Stock Watering	Maintenance of Fresh Water Ecosytem (Slightly to Moderately Dist						
	Toxaphene	mg/L	0.0005				0.0001	<0.001	<0.001	<0.001	<0.001	-	<0.001
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		*10*		0.01	<2	<2	<2	<2	<0.5	<2
	Bolstar (Sulprofos)	µg/L	2		*20*			<2	<2	<2	<2	-	<2
	Bromophos-ethyl	µg/L	0.5		*20*			-	-	-	-	<0.5	-
	Carbophenothion	µg/L	0.5		*1*			-	-	-	-	<0.5	-
	Chlorpyrifos	µg/L	0.5		*2*		0.01	<2	<2	<2	<2	<0.5	<2
	Chlorpyrifos-methyl	mg/L	0.0005					-	-	-	-	<0.0005	-
	Demeton-O	µg/L	2					<2	<2	<2	<2	-	<2
	Diazinon	µg/L	0.5		*10*		0.01	<2	<2	<2	<2	<0.5	<2
	Dichlorvos	µg/L	0.5		*20*			<2	<2	<2	<2	<0.5	<2
	Dimethoate	µg/L	0.5		*100*		0.15	-	-	-	-	<0.5	-
	Disulfoton	µg/L	2		*6*			<2	<2	<2	<2	-	<2
	Ethion	µg/L	0.5		*6*			<2	<2	<2	<2	<0.5	<2
	Ethoprop	µg/L	2		*1*			<2	<2	<2	<2	-	<2
	Fenitrothion	µg/L	2		*20*		0.2	<2	<2	<2	<2	-	<2
	Fensulfothion	µg/L	2		*20*			<2	<2	<2	<2	-	<2
	Fenthion	µg/L	0.5					<2	<2	<2	<2	<0.5	<2
	Malathion	µg/L	0.5		*100*		0.05	-	-	-	-	<0.5	-
	Merphos	mg/L	0.002					<0.002	<0.002	<0.002	<0.002	-	<0.002
	Methyl parathion	µg/L	2		*6*			<2	<2	<2	<2	<2	<2
	Mevinphos (Phosdrin)	µg/L	2		*6*			<2	<2	<2	<2	-	<2
	Monocrotophos	µg/L	2		*2*			-	-	-	-	<2	-
	Naled (Dibrom)	µg/L	2					<2	<2	<2	<2	-	<2
	Phorate	µg/L	2					<2	<2	<2	<2	-	<2
	Prothiofos	µg/L	0.5					-	-	-	-	<0.5	-
	Ronnel	µg/L	2		*60*			<2	<2	<2	<2	-	<2
	Trichloronate	µg/L	2					<2	<2	<2	<2	-	<2
Pesticides	Demeton-S-methyl	µg/L	0.5				4	-	-	-	-	<0.5	-
	Fenamiphos	µg/L	0.5					-	-	-	-	<0.5	-
	Parathion	µg/L	2		*30*		0.004	-	-	-	-	<2	-
	Pirimphos-ethyl	µg/L	0.5		*1*			-	-	-	-	<0.5	-
	Tokuthion	mg/L	0.002					<0.002	<0.002	<0.002	<0.002	-	<0.002
Herbicides	Dinoseb	µg/L	50					-	-	-	-	<50	-
PAH/Phenols	2,4-dimethylphenol	µg/L	2				2	<2	<2	<2	<2	<4	<2
	2,4-dinitrophenol	mg/L	0.1				0.045	-	-	-	-	<0.1	-
	2-methylphenol	µg/L	2					<2	<2	<2	<2	<4	<2
	2-nitrophenol	µg/L	4				2	<5	<5	<5	<5	<4	<5
	3-&4-methylphenol	µg/L	2					<5	<5	<5	<5	<4	<5
	4,6-Dinitro-2-methylphenol	µg/L	50					-	-	-	-	<50	-
	4,6-Dinitro-o-cyclohexyl phenol	µg/L	50					-	-	-	-	<50	-
	4-chloro-3-methylphenol	µg/L	2					<2	<2	<2	<2	<4	<2
	4-nitrophenol	µg/L	50				58	-	-	-	-	<50	-
	Acenaphthene	µg/L	1					<1	<1	<1	<1	<1	<1
	Acenaphthylene	µg/L	1					<1	<1	<1	<1	<1	<1
	Anthracene	µg/L	1				0.01	<1	<1	<1	<1	<1	<1
	Benz(a)anthracene	µg/L	1					<1	<1	<1	<1	<1	<1
	Benzo(a) pyrene	µg/L	0.5		*0.01*		0.1	<1	<1	<1	<1	<0.5	<1
	Benzo(b)fluoranthene	µg/L	1					<1	<1	<1	<1	<1	<1
	Benzo(g,h,i)perylene	µg/L	1					<1	<1	<1	<1	<1	<1
	Benzo(k)fluoranthene	µg/L	1					<1	<1	<1	<1	<1	<1
	Chrysene	µg/L	1					<1	<1	<1	<1	<1	<1
	Dibenz(a,h)anthracene	µg/L	1					<1	<1	<1	<1	<1	<1
	Fluoranthene	µg/L	1				1	<1	<1	<1	<1	<1	<1
	Fluorene	µg/L	1					<1	<1	<1	<1	<1	<1
	Indeno(1,2,3-c,d)pyrene	µg/L	1					<1	<1	<1	<1	<1	<1
	Naphthalene	µg/L	1				16	<1	<1	<1	<1	<1	<1
	PAHs (Sum of total)	µg/L	1					<1	<1	<1	<1	-	<1
	Phenanthrene	µg/L	1				0.6	<1	<1	<1	<1	<1	<1
	Phenol	µg/L	2				320	<2	<2	<2	<2	<4	<2
	Pyrene	µg/L	1					<1	<1	<1	<1	<1	<1
Halogenated Phenols	2,3,5,6-Tetrachlorophenol	mg/L	0.002				0.0002	-	-	-	-	<0.002	-
	2,4,5-trichlorophenol	µg/L	2		*1*		0.5	-	-	-	-	<2	-
	2,4,6-trichlorophenol	µg/L	2		*10*		3	<2	<2	<2	<2	<2	<2
	2,4-dichlorophenol	µg/L	2				120	<2	<2	<2	<2	<2	<2
	2,6-dichlorophenol	µg/L	2				34	<2	<2	<2	<2	<2	<2
	2.3.4.5 & 2.3.4.6-Tetrachlorophenol	mg/L	0.002					-	-	-	-	<0.002	-
	2-chlorophenol	µg/L	2				340	<2	<2	<2	<2	<2	<2
	Pentachlorophenol	µg/L	2		*10*		3.6	<5	<5	<5	<5	<2	<5
Polychlorinated Biphenyls	Arochlor 1016	µg/L	1				0.001	<1	<1	<1	<1	-	<1
	Arochlor 1221	µg/L	1				1	<1	<1	<1	<1	-	<1

Field_ID	MW01	MW02	MW03	QC200	QC201	QC202
LocCode	MW01	MW02	MW03	QC200	QC201	QC202
Sampled_Date-T	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010

Chem_Group	ChemName	Units	EQL	Agriculture, Parks and Gardens Guidelines	*ANZECC (2000) Primary Contact Recreation*	ANZECC (2000) Stock Watering	Maintenance of Fresh Water Ecosytem (Slightly to Moderately Dist						
	Arochlor 1232	µg/L	1				0.3	<1	<1	<1	<1	-	<1
	Arochlor 1242	µg/L	1				0.3	<1	<1	<1	<1	-	<1
	Arochlor 1248	µg/L	1				0.03	<1	<1	<1	<1	-	<1
	Arochlor 1254	µg/L	1				0.01	<1	<1	<1	<1	-	<1
	Arochlor 1260	µg/L	1					<1	<1	<1	<1	-	<1
	PCBs (Sum of total)	µg/L	1		*0.1*			<10	<10	<10	<10	<1	<10
BTEX	Benzene	µg/L	1		*10*		950	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	1				80	<1	<1	<1	<1	<2	<1
	Styrene	µg/L	1					<1	<1	<1	<1	<5	<1
	Toluene	µg/L	1				180	<1	<1	<1	<1	<2	<1
	Xylene (m & p)	µg/L	2					-	-	-	-	<2	-
	Xylene (o)	µg/L	1				350	<1	<1	<1	<1	<2	<1
	Xylene Total	µg/L	3					<1	<1	<1	<1	<4	<1
Chlorinated Hydrocarbons	1,1,1,2-tetrachloroethane	µg/L	1					<1	<1	<1	<1	<5	<1
	1,1,1-trichloroethane	µg/L	1				270	<1	<1	<1	<1	<5	<1
	1,1,2,2-tetrachloroethane	µg/L	1				400	<1	<1	<1	<1	<5	<1
	1,1,2-trichloroethane	µg/L	1				6500	<1	<1	<1	<1	<5	<1
	1,1-dichloroethane	µg/L	1				90	<1	<1	<1	<1	-	<1
	1,1-dichloroethene	µg/L	1		*0.3*		700	<1	<1	<1	<1	<5	<1
	1,2,3-trichloropropane	µg/L	1					<1	<1	<1	<1	-	<1
	1,2-dichloroethane	µg/L	1		*10*		1900	<1	<1	<1	<1	<5	<1
	1,2-Dichloroethene	µg/L						<2	<2	<2	<2	<10	<2
	1,2-dichloropropane	µg/L	1				900	<1	<1	<1	<1	-	<1
	1,3-dichloropropane	µg/L	1				1100	<1	<1	<1	<1	-	<1
	Benzal Chloride	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Benzotrichloride	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	<0.1
	Benzyl chloride	mg/L	0.0001					<0.001	<0.001	<0.001	<0.001	-	<0.001
	Bromodichloromethane	µg/L	1					<1	<1	<1	<1	-	<1
	Bromoform	µg/L	1					<1	<1	<1	<1	-	<1
	Carbon tetrachloride	µg/L	1		*3*		240	<1	<1	<1	<1	<5	<1
	Chlorodibromomethane	µg/L	1					<1	<1	<1	<1	-	<1
	Chloroform	µg/L	1				370	<1	<1	<1	<1	<5	<1
	cis-1,2-dichloroethene	µg/L	1					<1	<1	<1	<1	<5	<1
	cis-1,3-dichloropropene	µg/L	1					<1	<1	<1	<1	-	<1
	Dibromomethane	µg/L	1					<1	<1	<1	<1	-	<1
	Dichloromethane	µg/L	1				4000	<1	<1	<1	<1	<7	<1
	Hexachlorobutadiene	µg/L	0.1				0.04	<0.1	<0.1	<0.1	<0.1	<5	<0.1
	Hexachlorocyclopentadiene	µg/L	0.1				0.05	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Hexachloroethane	µg/L	0.1				290	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Trichloroethene	µg/L	1		*30*		330	<1	<1	<1	<1	<5	<1
	Tetrachloroethene	µg/L	1		*10*		70	<1	<1	<1	<1	<5	<1
	trans-1,2-dichloroethene	µg/L	1					<1	<1	<1	<1	<5	<1
	trans-1,3-dichloropropene	µg/L	1					<1	<1	<1	<1	-	<1
	Vinyl chloride	µg/L	1				100	<1	<1	<1	<1	<50	<1
Halogenated Benzenes	1,2,3,4-tetrachlorobenzene	mg/L	0.0001				0.002	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
	1,2,3,5-Tetrachlorobenzene	mg/L	0.0001				0.003	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001
	1,2,3-trichlorobenzene	µg/L	1				3	<1	<1	<1	<1	-	<1
	1,2,4,5-tetrachlorobenzene	µg/L	0.1				5	<0.1	<0.1	<0.1	<0.1	-	<0.1
	1,2,4-trichlorobenzene	µg/L	1				85	<1	<1	<1	<1	<5	<1
	1,2-dichlorobenzene	µg/L	1				160	<1	<1	<1	<1	<5	<1
	1,3,5-Trichlorobenzene	µg/L	0.1				8	<0.1	<0.1	<0.1	<0.1	-	<0.1
	1,3-dichlorobenzene	µg/L	1				260	<1	<1	<1	<1	-	<1
	1,4-dichlorobenzene	µg/L	1				60	<1	<1	<1	<1	<5	<1
	Chlorobenzene	µg/L	1				55	<1	<1	<1	<1	<5	<1
	Hexachlorobenzene	µg/L	0.1				0.05	<0.1	<0.1	<0.1	<0.1	-	<0.1
	Pentachlorobenzene	µg/L	0.1				1.5	<0.1	<0.1	<0.1	<0.1	-	<0.1
Halogenated Hydrocarbons	1,2-dibromoethane	µg/L	1					<1	<1	<1	<1	-	<1
	Bromomethane	µg/L	1					<1	<1	<1	<1	-	<1
	Chloromethane	µg/L	1					<1	<1	<1	<1	-	<1
	Iodomethane	µg/L	1					<1	<1	<1	<1	-	<1
	Trichlorofluoromethane	µg/L	1					<1	<1	<1	<1	-	<1
VOCs	1,3-Dichloropropene	µg/L					0.1	<2	<2	<2	<2	-	<2

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Figures

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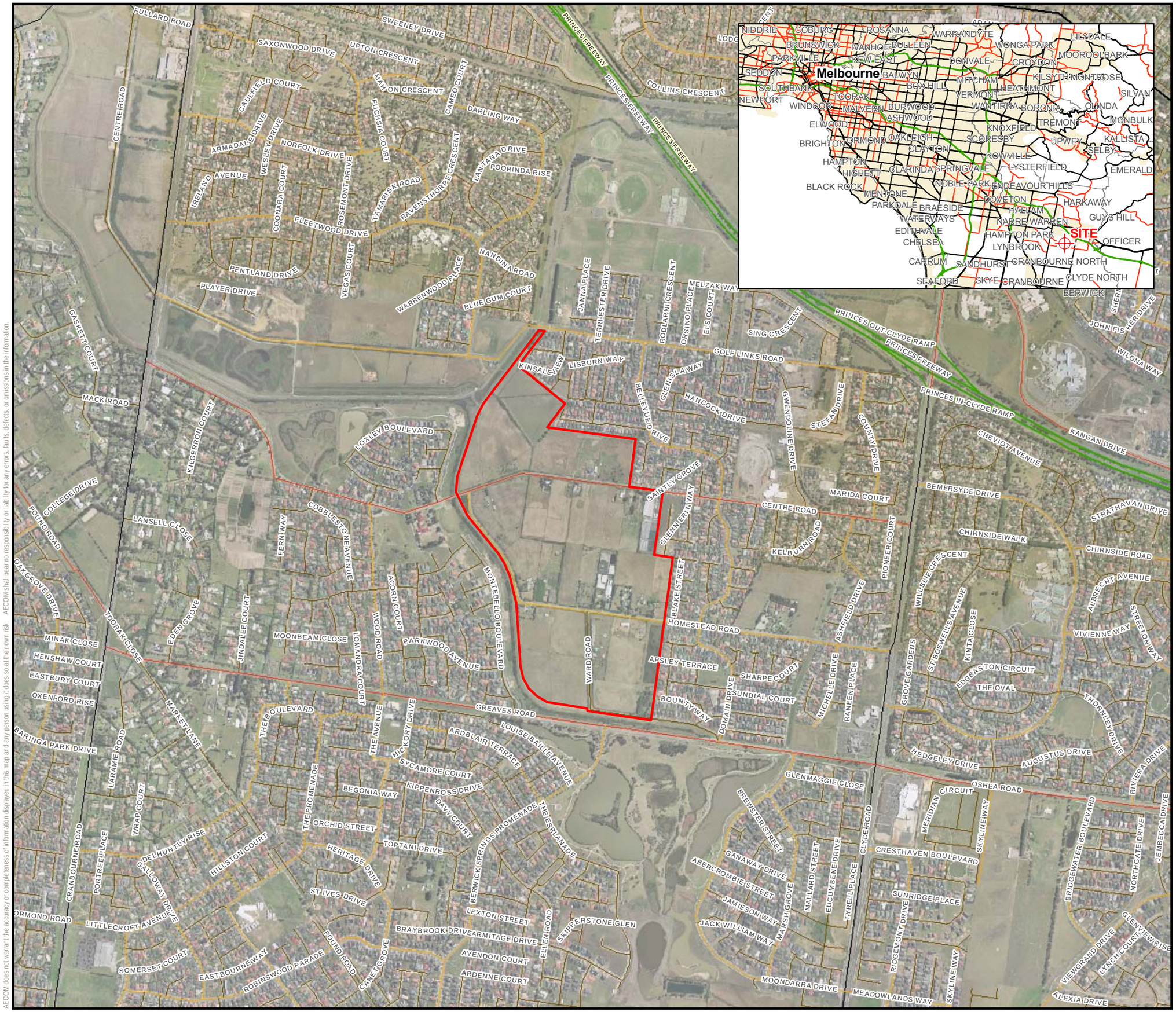

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N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 125 250 500

metres

1:15,000 (when printed at A3)

LEGEND

Site Boundary

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(additional data)

SITE LOCALITY

Growth Areas Authority

Geotechnical and Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	ART 30 Jul 2010

Figure

F1

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Map Document: (G:\GISMEL\60156173_GAA_Berwick\01\ArcGIS\60156173_FigF1_SiteLocation_14May10.mxd)

A3 size

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Open Drainage Chanel
Stockpiled Soil
Stockpiled Soil
Raised Land
Raised Land
Various Hard Rubbish
Stockpiled Soil & Building Rubble
Stockpiled Soil
Open Drainage Chanel
Stockpiled Soil
Wrecked Car & 200L drum
Stockpiled Soil
Raised Land
Centaflora Nursery
Stockpile Cont. Material Soil & Misc Waste
Stockpile with Potential Asbestos
Possible Hard Rubbish
Stockpiled Soil
Hard Waste
Alameda Homestead Nursery
Berwick boarding kennels & cattery
Car/ Truck Storage
Buddhist Temple
Homestead Rd Wetlands (Melbourne Water)
Stockpiled Soil

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

NORMAN PLACE
FLEETWOOD DRIVE
RODLARNI CRESCENT
ORSINO PLACE
ELS COURT
DEMPSTER WAY
GOLF LINKS ROAD
ALBERTA WAY
LARNE CLOSE
KINSALE VIEW
ECLINTON CLOSE
LISBURN WAY
CADELL PLACE
GLENISLA WAY
EUSTON COURT
KURNWILL PLACE
TURELLA CLOSE
HANCOCK DRIVE
BEWLEY WAY
GRAND ARCH WAY
DAHLEN PLACE
ASTI PLACE
CASHEL COURT
SHAFTSBURY AVENUE
DANEHILL GROVE
FILANTE GROVE
AMI COURT
LOXLEY BOULEVARD
SHEFFIELD COURT
OXFORD COURT
KALASTAIRE GROVE
SAINTLY GROVE
TRAFALGAR COURT
CENTRE ROAD
LYNDAL COURT
BELLEVUE DRIVE
SACHIKO PLACE
CARABOTT PLACE
GLENNERI WAY
HARMON CLOSE
WILDFLOWER CRESCENT
CASTELLANA COURT
LOCARNO PLACE
HYACINTH RISE
BLOOMFIELD AVENUE
CREMONA PLACE
DIANTHUS COURT
MONTEBELLO BOULEVARD
VIEWMOUNT COURT
PARKWOOD AVENUE
BLAKE STREET
SHAZ COURT
CLAREMONT GLEN
BREE COURT
HOMESTEAD ROAD
DOMAIN DRIVE
WOODCUTTERS PLACE
TREETOP COURT
PINEVIEW COURT
WARD ROAD
APSLEY TERRACE
FARNBOROUGH WAY
FABRIANO PLACE
BOUNTY WAY
HICKORY DRIVE
EVERGOLD CLOSE
GREAVES ROAD
ARDBLAIR TERRACE
LOUISE BAILLE AVENUE

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N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 50 100 150 200
metres

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LEGEND

Site Boundary

26 Lot Number

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SITE LAYOUT

Growth Areas Authority
Geotechnical and Preliminary Desktop Review and Targeted Environmental Soil Assessment
PRP No.09 - Berwick Waterways, Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	ART 30 Jul 2010

Figure
F2

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DATUM GDA 1994, PROJECTION MGA ZONE 55

0 50 100 150 200

metres

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Legend

- Monitoring Well Locations
- Test Pit/ Soil Stockpile Sample
- Site Boundary

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SOIL SAMPLE LOCATIONS

Growth Areas Authority

Geotechnical and Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

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Figure

F3

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DATUM GDA 1994, PROJECTION MGA ZONE 55

0 50 100 150 200

metres

1:5,000 when printed at A3

Legend

- Monitoring Well Locations
- Test Pit/ Soil Stockpile Sample
- MW03 SWL: 19.37 — Bore Id, Standing Water Level (mAHD)
- Site Boundary
- -19.75 — Inferred Groundwater Contour (mAHD)
- Inferred Groundwater Contour (mAHD)

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GROUNDWATER CONTOURS - JULY 2010

Growth Areas Authority

Geotechnical and Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	DJB 28 Jan 2011

Figure

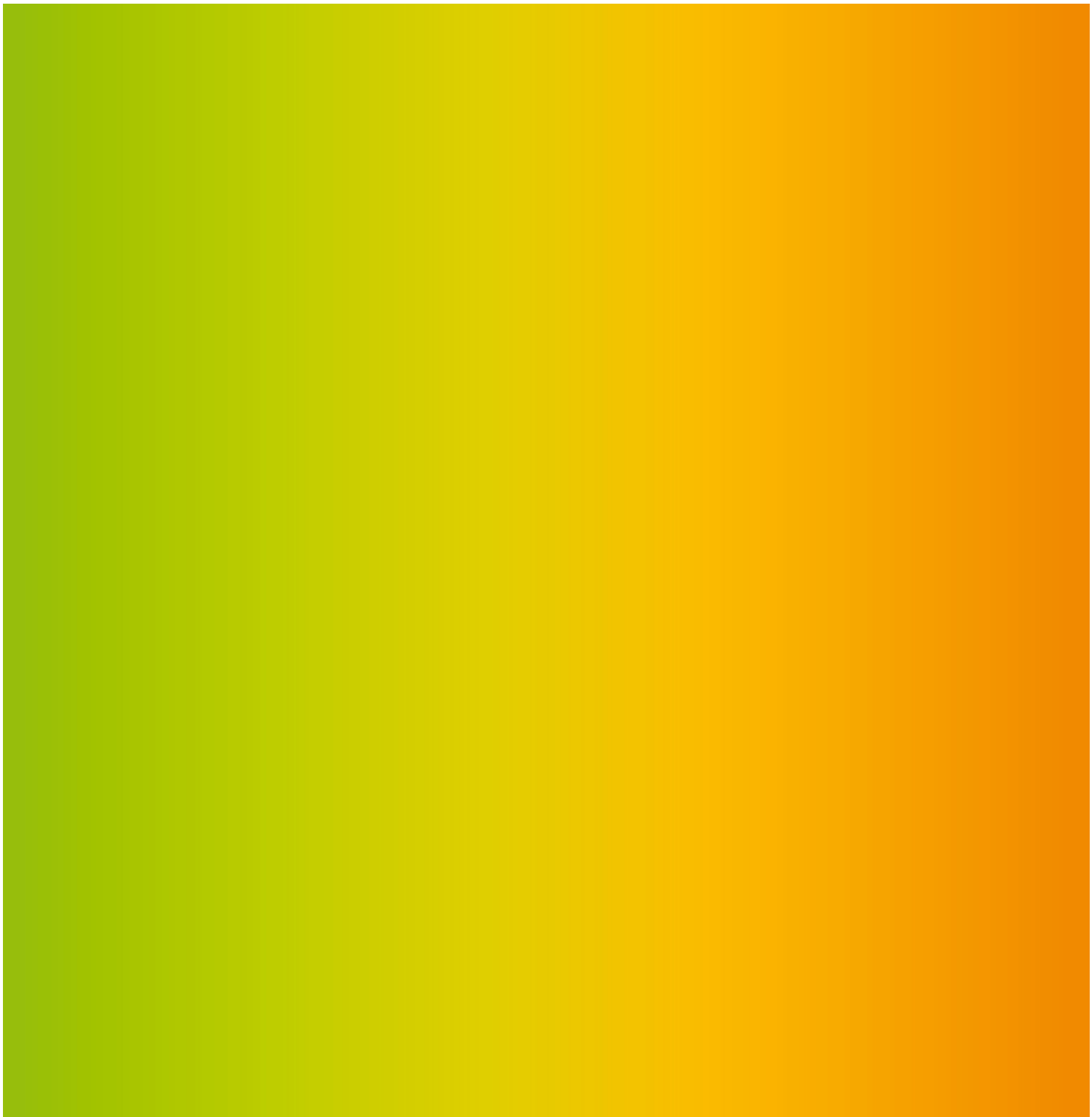
F4

Appendix A

Preliminary Geotechnical Site Investigation Report

Preliminary Geotechnical Site Investigation Report

Precinct Structure Plan No. 9 - Berwick Waterways



Preliminary Geotechnical Site Investigation Report

Precinct Structure Plan No. 9 - Berwick Waterways

Prepared for

Growth Areas Authority (GAA)

Prepared by

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22 December 2010

60156173

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Quality Information

Document	Precinct Structure Plan No. 9 - Berwick Waterways , Preliminary Geotechnical Site Investigation Report
Ref	60156173
Date	22 December 2010
Prepared by	Kisina Sofele/Justin King
Reviewed by	Adam Lander

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	14-Jul-2010	Draft Issue	Ian Cookson Associate Director	
0	22-Dec-2010	Final	Ian Cookson Technical Director	

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1.0 Introduction

The Growth Areas Authority (GAA) has commissioned AECOM Australia Pty. Ltd (AECOM) to conduct a preliminary desktop review and targeted geotechnical and environmental assessment at Precinct Structure Plan (PSP) No. 09 – Berwick Waterways. The Site is located at 187 Golf Links Road, 322-364 Centre Road, 94-138 Homestead Road, 101-137 Homestead Road and 1 Ward Road, Berwick. As part of the assessment AECOM have carried out a preliminary geotechnical site investigation to assess the ground conditions at the Site.

This report presents the results of the preliminary geotechnical site investigation, including laboratory results, recommendations regarding excavation properties; permeability of soils; and the suitability of site material for use as onsite fill and wetland construction.

2.0 Project and Scope

2.1 Proposed Development

It is understood that the Site has been identified for potential rezoning to allow residential development. Based on the "Theme 2 Wetland Fingers to Reduce Fill" Drainage Plan provided by GAA, at the time of this investigation the proposed re-zoned area is to include:

- A constructed wetland and associated drainage infrastructure traversing from the north-west corner of the Site into Melbourne Water's existing Homestead Road Wetland located in the south-east corner of the Site The new wetland is to intersect Centre Road, Homestead Road, Ward Road and a number of rural properties.
- Construction of unbound granular material pavements with thin bituminous surfacing to replace the existing pavements along Homestead Road and Ward Road.
- Filling of property lots for potential housing construction.

2.2 Aim and Scope of Investigation

The aims of the investigation are to gain a preliminary understanding of the subsurface conditions at the Site and to provide a geotechnical assessment of the suitability of the soil to be used as on-site fill and material for the construction of the proposed wetlands.

The scope of works for this preliminary investigation comprised the following:

- Excavation of 16 test pits to depths of between 2.9 metres and 3.2 metres. The test pits were targeted at areas along the proposed wetland alignment and potential fill sites.
- The collection of disturbed soil samples, and in-situ pocket penetrometer and hand vane tests.
- Geotechnical laboratory testing and analysis of selected soil samples.
- Compilation of a site investigation report to include results and recommendations regarding the Site and wetland construction.

3.0 Regional Geology

The Geological Survey of Victoria 1:63,360 Series Geological Map, Cranbourne (1967) indicates that the Site is underlain by recent Quaternary aged alluvial deposits comprising peaty clay and clay (mainly swamp deposits), overlying Silurian aged sandstones, siltstones, mudstones and shales.

4.0 Fieldwork

Fieldwork was undertaken in the properties adjacent to Centre Road and Homestead Road, Berwick from Wednesday 26th May to Friday 28th May 2010. A total of sixteen test pits were excavated using a 3 tonne JCB 8045 ZTS excavator with 600mm and 1100mm buckets. Test pits were excavated to depths between 2.9 metres and 3.2 metres. Underground services in the area were located by a “Dial Before You Dig” service, marked out prior to excavating and confirmed on site by AECOM staff prior to excavations.

Pocket penetrometer and hand vane tests were typically performed in-situ at regular depths from the surface. Results of pocket penetrometer and hand vane tests are included on the geotechnical engineering test pit logs. Dynamic Cone Penetrometer (DCP) tests were undertaken adjacent to each test pit to provide additional information on soil consistency. Disturbed and bulk samples were taken at each location and details of the samples are shown on the test pit logs.

The test pit excavation was carried out under the direction and full time presence of an AECOM geotechnical engineer who was responsible for directing the extent of sampling and testing, and the logging of the conditions encountered. The test pit locations are shown on the plan presented in Appendix A. Upon completion of the test pits the locations were reinstated with excavated material and compacted at the surface by rolling over with the tracks of the excavator.

The test pit logs are presented in Appendix B. Material classification and logging techniques were carried out in accordance with the attached explanatory notes and, wherever possible, material classifications have been correlated to the results of laboratory testing.

The coordinates of the test pits were recorded using a handheld GPS system; accuracy may vary up to +/- 20m. Surface elevations were not recorded.

.

5.0 Laboratory Testing

Geotechnical and chemical laboratory testing was undertaken by laboratories accredited by National Association of Testing Authorities Australia (NATA) for the analyses undertaken. Laboratory test result reports are included in Appendix D and summarised in Section 6.3. The soil samples selected for laboratory testing were considered to be representative of subsurface materials relevant to the design of the proposed wetland.

The laboratory of Ground Science Pty Ltd performed the geotechnical testing of soil. Testing comprised:

- 4 No. Atterberg Limits
- 6 No. Natural Moisture Content
- 5 No. Emerson Classification
- 3 No. California Bearing Ratio

The laboratory of ALS Laboratory Group performed chemical testing of soil samples. Testing comprised:

- 4 No. pH value
- 4 No. Electrical Conductivity
- 4 No. Sulfate content (as $SO_{4)}$
- 4 No. Chloride content

6.0 Results of Investigation

6.1 Surface Conditions

The PSP No. 9 – Berwick Waterways site is located in Berwick on the northern and southern side of Centre Road, and the northern and southern side of Homestead Road and is shown on the site plan presented in Appendix A. The exact location of the proposed wetland has not been finalised. However, based on "Theme 2 Wetland Fingers to Reduce Fill" Drainage Plan provided by GAA, it is understood to align from the north western section of the Site traversing Centre Road, Homestead Road and Ward Road and connecting into Melbourne Water's existing Homestead Road Wetland.

The area of the proposed development is a grassed, slightly undulating site, predominately utilised for rural residential purposes. The Site is surrounded by residential areas to the east and north and is bounded by the Hallam Valley Contour drain and Berwick town drain to the west.

At the time of investigation site was trafficable for a 4WD ute.

6.2 Subsurface Conditions

6.2.1 Geology

The subsurface materials encountered were generally consistent with the mapped geology in the vicinity of the Site. The following summary of the subsurface geology is inferred from the available site investigation data, and as such only represents the site conditions at the locations of the field investigation. Further details of ground conditions are presented on the test pits presented in Appendix B and photographs of the test pits and spoil are presented in Appendix C.

Table 1 Generalised summary of subsurface geology

Unit	Depth to Top of unit (m)	Thickness (m)	Locations	Typical Description
TOPSOIL	0	0.2 – 0.3	All	SILT: Low plasticity, brown to dark brown, with some clay, trace fine to medium grained sand, root matter
ALLUVIAL CLAY	0.2 – 0.3	Not penetrated (>3.0m)	All	CLAY: high plasticity, dark brown, brown, orange and grey, mottled, moist, consistency ranging from firm to very stiff

6.2.2 Groundwater

Groundwater was not observed in any of the test pits.

6.3 Laboratory Test Results

Results of the pocket penetrometers, hand vane tests and Dynamic Cone Penetrometer (DCP) tests were used for the estimation of soil consistency and are shown on the test pit logs in Appendix B. The results of laboratory tests were used in revising field descriptions on the test pit logs. Laboratory test certificates are included in Appendix D and results are summarised in the tables below.

Table 2 Summary of Atterberg Limits and moisture content test results

Unit	Test Pit	Depth (m)	Atterberg Limits			Linear Shrinkage (%)	Moisture Content (%)	Group Symbol
			Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)			
CLAY	TP-15	1.3-1.5	98	22	76	22.5	17.8	CH
CLAY	TP-15	2.0-2.2	99	27	72	19.5	38.2	CH
CLAY	TP-17	0.5-0.6	99	26	73	21.5	36.5	CH
CLAY	TP-17	2.0-2.2	85	22	63	20	35.8	CH
CLAY	TP-20	0.5-0.7	76	20	56	17	28.6	CH
CLAY	TP-20	2.0-2.2	74	17	57	22	32.0	CH

Atterberg Limit tests undertaken on clay soils at the Site indicate a Plasticity Index (PI) ranging between 56% and 76%. PI values of this range are typically characteristic of highly reactive soils.

Table 3 Summary of Standard California Bearing Ratio test results

Unit	Test Pit	Depth (m)	CBR Value (%)
CLAY	TP-25	0.5-0.7	6
CLAY	TP-27	0.45-0.7	6
CLAY	TP-28	0.5-0.7	3.5

The CBR tests undertaken indicate the optimum moisture content (OMC) of the residual clay soils to be approximately 24% to 29%. Moisture content tests on samples across the Site (Table 2) gave a range of field moisture contents between 18% and 38%, suggesting that at the time of the fieldwork the residual soils had a natural moisture content varying from lower to higher than the OMC.

Table 4 Summary of Emerson Dispersion test results

Unit	Test Pit	Depth (m)	Emerson Class Number
CLAY	TP-15	1.5-1.7	7
CLAY	TP-15	2.0-2.2	2
CLAY	TP-17	0.5-0.6	7
CLAY	TP-17	2.0-2.2	5
CLAY	TP-20	0.5-0.7	8
CLAY	TP-20	2.0-2.2	6

The results of the dispersion testing indicate that the material is typically non-dispersive (Emerson Class 6 to 8), although one test result returned as highly dispersive (Emerson Class 2).

Table 5 Pile durability testing, in accordance with AS 2159-2009: Piling - Design and Installation

Unit	Test Pit	Depth (m)	Piling Code Suite				
			pH (pH)	Electrical Conductivity (µS/cm)	Chloride (mg/kg)	Sulphate SO4 (mg/kg)	Moisture Content (%)
CLAY	TP-16	2.0-2.2	6.3	66	<20	120	26.2
CLAY	TP-19	0.5-0.7	5.2	59	<20	230	23.8
CLAY	TP-23	0.5-0.7	7.2	10	<20	60	28.9
CLAY	TP-25	2.0-2.2	5.8	101	<20	270	24.3

7.0 Recommendations

At the time of this investigation the information provided to AECOM regarding the configuration and design details of the wetland and proposed residential development was limited and, as such, the following recommendations are general in nature. Requirements for additional geotechnical site investigation and the recommendations given below should be reviewed following finalisation of the proposed development design.

7.1 Excavation Conditions

Excavations for shallow footings and pipeline trenches are likely to comprise predominately alluvial clay soils. Standard excavation equipment, such as a back hoe or excavator, should be suitable for excavation of the alluvial soils.

7.2 Slopes and Retaining Structures

It is assumed that the majority of excavations at the Site will be temporary (short term) excavations such as those for shallow spread/raft footings or buried services. Trench excavations deeper than 1.2m or otherwise containing very soft/soft, loose, wet or unstable materials should be battered, benched or have appropriate shoring provided.

Temporary batter slopes may be used for shallow excavations at the Site. A maximum slope grade of 1H:1V is recommended for temporary excavations, up to a height of 3m, within the firm to stiff alluvial clay soils.

Construction of any unsupported temporary slope greater than 3m in height will need to be assessed by a geotechnical engineer, on a case by case basis. Where battered slopes are not practical temporary support such as shoring or trench shields may be suitable. Further advice should be sought, once excavation details and methods have been finalised, should these be required.

If permanent cut slopes or excavations are required they should be adequately battered or retained. Batters for permanent excavations up to 3m in height/depth should not exceed 3H:1V in the firm to stiff alluvial clay soils.

If permanent retaining structures are required, design will need to be carried out by a suitably qualified engineer.

7.3 AS2870 Site Classification

Atterberg Limit tests undertaken on clay soils at the Site indicate a Plasticity Index (PI) ranging between 56% and 76%. PI values of this range are typically characteristic of highly reactive soils. Based on the high PI results and the Site Classification recommendations for an ‘Alluvial Clay Soil’ in Table D1, Australian Standard AS2870-1996 “Residential Slabs and Footings – Construction”, it is recommended that the Site is classified as Class ‘H’.

Class ‘H’ sites are highly reactive clay sites, which can experience characteristic surface movement of between 40mm and 70mm from moisture changes. Following finalisation of the design and layout it is recommend that further investigation and testing is undertaken to confirm this classification.

Engineered filling of the Site with inert (non-reactive) fill materials to depths greater than 0.8m may reduce the Site Classification.

Site classification is based on the Site conditions at the time of investigation. Site classification may need to be reconsidered if significant (ie. >0.4m) of filling is carried out onsite.

7.4 Soft Landscaping

Planting and removal of trees can cause significant moisture variation and shrink-swell in highly reactive soils. For this reason soft landscaping should take into consideration the effects of new tree plantings and vegetation removal on proposed and existing structures. In particular, tree planting should be restricted to a distance greater than the mature height of the trees away from the existing or proposed structures.

7.5 Building Footings

At the time of this investigation the form of the proposed structures for the development were not known. However, due to the high reactivity of soils (refer Section 7.3) it is unlikely that shallow pad or strip footings would be suitable. It is anticipated that a stiffened raft will be suitable for structures at the Site.

Based on the results of the field investigation and assuming the proposed structures are low level buildings, founding on the clay soils with stiff or better consistency, an allowable bearing pressure of 100kPa may be adopted.

It is recommended that footing excavations be inspected by a geotechnical engineer during construction to ensure that foundation conditions are consistent with those on which design recommendations are based.

Because of the high reactivity of soils at the Site, service trenches beneath footings should be minimised and where used should be backfilled with compacted low permeability material to reduce water migration and ponding. All surface water should be controlled and diverted away from buildings.

It is not expected that pile footings will be an economical solution for the low-rise residential structures anticipated for the Site. However, based on information provided by GAA, it is understood that forms of commercial structures may be proposed for some parts of the Site and, depending on the loading conditions, a piled solution may be appropriate. Heavily loaded structures will likely need to be founded on piles that extend into the underlying Silurian rock (or other suitable material). Should pile footings be considered, additional geotechnical investigation and advice will be required.

Soil chemistry testing for durability of foundation elements in the ground indicates that in accordance with Australian Standard 'AS 2159-2009: Piling - Design and Installation' the soil is classified as 'non-aggressive'.

7.6 Reuse of Site Material as General Fill

It is understood that it is proposed to increase ground levels for some parts of the Site by filling by an approximate average depth of 0.5m.

The alluvial clay materials present at the Site may be used untreated as general fill in areas that are not settlement sensitive. Due to the moisture sensitivity, the untreated alluvial clay materials are generally considered unsuitable for use as engineered fill. However, the alluvial clay may be treated by addition of lime to reduce moisture sensitivity, reactivity and thereby improve the suitability of the soils for use as both general and engineered fill. Alternatively, structures and pavements may be designed to account for the moisture sensitivity of the untreated alluvial clay, although this is unlikely to be an economical solution.

It is understood that soils at the Site are considered to be Potential Acid Sulfate Soils (PASS) and may require treatment as part of environmental management of the waterway excavations. No testing of soils for potential acid sulfates was undertaken as part of this preliminary geotechnical investigation. Lime is typically used to treat and manage PASS. If soils onsite already require treatment with lime due to the PASS a cost effective solution may be to ensure that the liming volumes are sufficient to both mitigate PASS and reduce moisture sensitivity. If liming rates are adequate, excavated alluvial clay materials could be used at the Site as engineered fill.

The soil liming rate and volume should be determined in accordance with VicRoads Code of Practice RC500.23 and Specification 290. Typically lime volumes to adequately reduce moisture sensitivity are between 3 and 5%.

A possible construction sequence for areas of lime treated alluvial clay fill is as follows:

1) Strip topsoil and unsuitable materials off fill areas and proof roll.
2) Progressively excavate waterway.
3) Spread single layer of excavated material (up to 300mm thick) across areas of fill.
4) Mix lime into layer using appropriate plant and/or equipment.
5) Compact treated layer and repeat steps 3 to 5 until necessary level is achieved.

The impact of increased lime concentrations in the surficial soils on future landscaping works, flora and fauna may need to be considered.

7.7 Suitability of Site Materials for Use as a Clay Liner for Wetlands

Typically the permeability of clay materials used in lagoon liners is approximately $k=10^{-9}$ m/s. This is likely achievable with the alluvial high plasticity clay material at the Site (subject to testing). The in-situ permeability of the alluvial clays is also likely to be very low, although the presence of any minor silt/sand lenses or partings could locally increase this significantly. It is recommended that the subgrade of any clay liner be scarified, moisture-conditioned and recompacted before placing the liner.

Some cracking of the clay liner is likely to occur on drying due to shrinkage of the high plasticity clays. This may be mitigated by providing surface cover, such as thick soil and topsoil cover (for example, 0.5m), to reduce evaporation and moisture change or by maintaining the wetlands in a wet condition, if required.

The results of the dispersion testing indicated that the material is typically non-dispersive (Emerson Class 6 to 8), although one test result returned as highly dispersive (Emerson Class 2). Should the dispersivity of the clay soils be important to the operation of the wetlands, further dispersion testing should be undertaken. Lime may be used to reduce the dispersive characteristics.

It should be noted that addition of lime to clay can increase the permeability and chemical properties, such as pH, of the soil. This should be considered during wetland and clay liner design if lime treated soils are to be incorporated.

7.8 Pavements

7.8.1 Pavement Design Parameters

Laboratory Californian Bearing Ratio (CBR) testing undertaken on the clay residual soils resulted in CBR values of 3.5% and 6.0%. A CBR value of 3% may be adopted for pavement design.

In accordance with VicRoads Code of Practice RC 500.22 the alluvial clay soils onsite are classified as expansive and as such will require a minimum cover to the top of pavement. Refer to VicRoads Code of Practice RC 500.22 Figure 5.1 for minimum cover requirements.

The CBR tests undertaken indicate the optimum moisture content (OMC) of the residual clay soils to be approximately 24% to 29%. Moisture content tests on samples across the Site gave a range of field moisture contents between 18% and 38%, suggesting that at the time of the fieldwork the residual soils had a natural moisture content varying from lower to higher than the OMC.

7.8.2 Subgrade Preparation

Although no information is available about the proposed development layout, the following general subgrade preparation procedures are recommended:

- Areas where fill is to be placed should be stripped of any topsoil materials and soils containing organic material including roots and stockpiled separately on site. Stripping depths are expected to range between approximately 50mm to 200mm.
- Box out the subgrade, where required, to the specified design subgrade level and compact the subgrade material to a minimum dry density ratio of 98% Standard using a vibrating pad/sheep's foot roller of at least 10 tonnes static mass. The exposed subgrade should be moisture conditioned to within -3% to +1% of Optimum Moisture Content (OMC) and compacted over a depth of 300mm in accordance with AS3798 – 2007: Guidelines on earthworks for commercial and residential developments, Section 5.2.
- The prepared subgrade should be test rolled using suitable plant in accordance with AS3798 – 2007 section 5.5. Test rolling should be undertaken to ensure that the subgrade is capable of withstanding the applied loading without visible deformation or springing. Test rolling should be undertaken in the presence of a suitably qualified geotechnical engineer. If soft areas are identified during test rolling the areas should be removed and replaced with suitable select fill and recompacted. The select fill should be placed in horizontal layers no greater than 200mm loose thickness.

Materials may require moisture conditioning during the subgrade preparation process.

Where lime stabilisation is utilised to improve the acceptable design CBR value, compaction of the subgrade is to be undertaken following the lime mixing process. Test rolling is required following lime stabilisation.

Where a capping layer is utilised to improve the acceptable design CBR value the fill material should be placed in horizontal layers no greater than 200mm loose thickness. Test rolling is required following placement of the capping layer.

It is recommended that the subgrade preparation should be carried out during dry weather conditions wherever possible. Provision for the effective drainage of surface water from the subgrade should be made by means such as temporary drains or pumping equipment.

It is recommended that subgrade preparation and earthworks at proposed building locations should be carried out under Level 1 supervision as defined in AS 3798-2007.

8.0 References

AS3798-2007: Guidelines on earthworks for commercial and residential developments

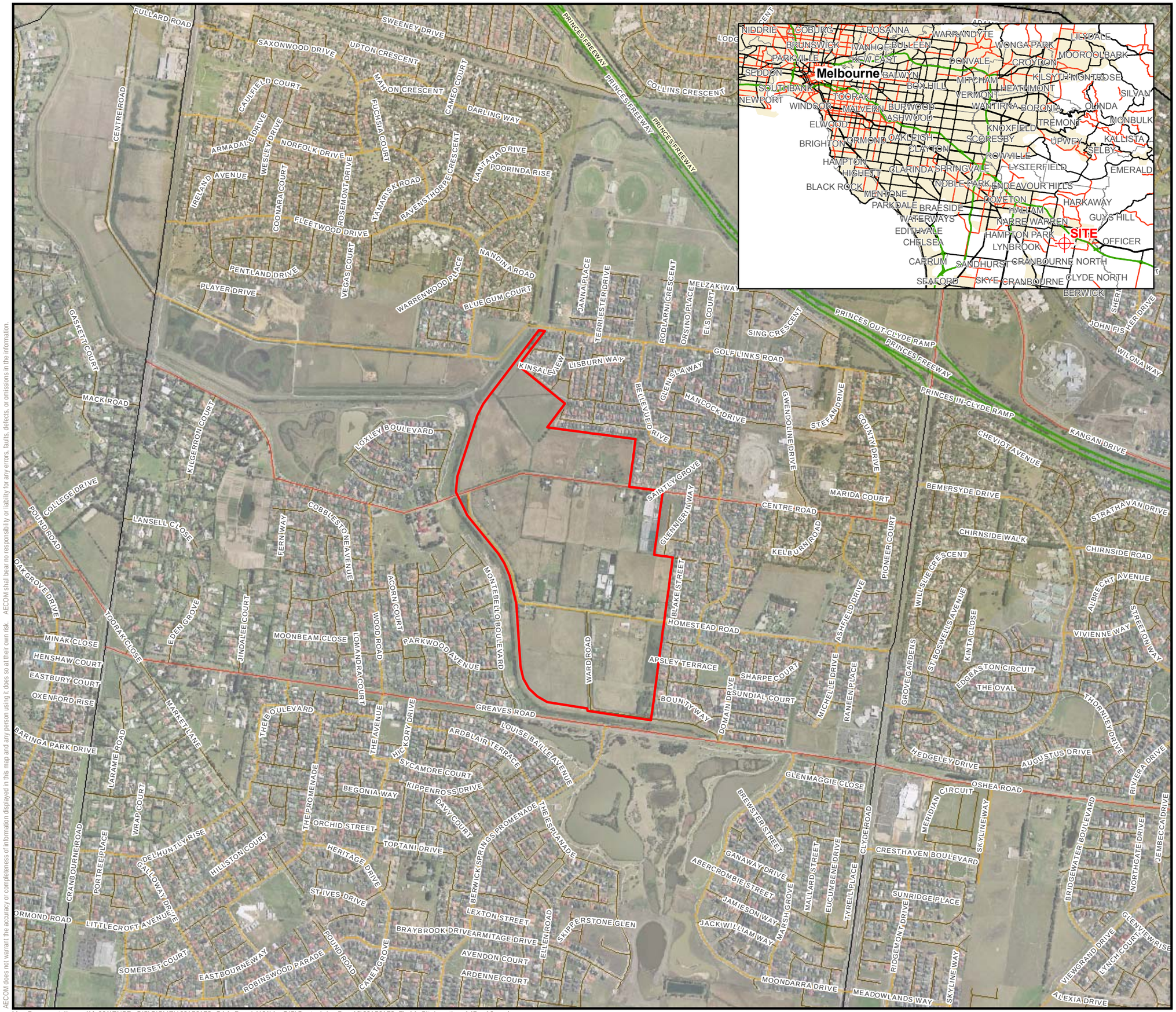
AS2159-2009: AS 2159-2009 : Piling - Design and installation

AS2870-1996 : Residential slabs and footings - Construction

.

Appendix A

Site Plan and Test Pit Locations



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N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 125 250 500

metres

1:15,000 (when printed at A3)

LEGEND

Site Boundary

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SITE LOCALITY

Growth Areas Authority

Preliminary Geotechnical Site Investigation

PSP No.09 - Berwick Waterways
Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	ART 14 Dec 2010

Figure

A1

Map Document: \\aumel1fp001\ENSR_GIS\GISMEL\60156173_GAA_Berwick\01\ArcGIS\Geotech Inv Dec 10\60156173_FigA1_SiteLocation_14Dec10.mxd

A3 size

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N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 50 100 150 200

metres

1:5,000 when printed at A3

Legend

- Test Pit/ Soil Stockpile Sample
- Site Boundary

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TEST PIT LOCATION PLAN

Growth Areas Authority

Preliminary Geotechnical Site Investigation

PSP No.09 - Berwick Waterways
Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	ART 14 Dec 2010

Figure

A2

Map Document: \\aumel1fp001\ENSR_GIS\GISMEL\60156173_GAA_Berwick\01\ArcGIS\Geotech Inv Dec 10\60156173_FigA2_SoilSampleLocations_14Dec10.mxd

A3 size

Appendix B

Geotechnical Engineering Test Pit Logs

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **26/05/2010**	**TP-14**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT**	Length: **3.0 m**	Easting: **353068 m**	R.L. Surface:		
Equipment: **JCB 8045 ZTS Excavator**	Width: **1.0 m**	Northing: **5786959 m**	Datum: **MGA**		

Sample/Test			Material Substance						
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0				ML	SILT: low plasticity, brown, with some clay, roots.	D	St	
			Ds			CH	CLAY: high plasticity, brown, trace sand.	D-M		
		0.5	Bs Ds				dark brown.	M	St-VSt	
				HV=56					St	
		1.0								
				PP=200,270,250,310			mottled grey, orange and brown.		F-St	
		1.5							St	
		2.0		PP=300,140,240						
			Ds	HV=58						
		2.5								DCP terminated at 2.4m.
		3.0					Test Pit TP-14 terminated at 3m			
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **26/05/2010**	**TP-15**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352967 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786983 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, trace fine to medium grained sand, roots.	D-M	St-VSt	
		0.5	Bs			CH	CLAY: high plasticity, dark brown, trace roots.	M		
		1.0								
		1.5	Ds	HV=134 PP=450,220,410 410			mottled orange, grey and brown.		St	
		2.0	Ds	HV=70 PP=250,270,280						
		2.5								
		3.0					Test Pit TP-15 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-16**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352444 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787363 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt	
						CH	CLAY: high plasticity, brown, grey and orange, trace roots.	M		
		0.5	Ds	HV=132 PP=400,400,600						
		1.0					mottled grey, orange and brown.		St	
		1.5	Ds	HV=64 PP=200,220,250			mottled grey and orange.			
		2.0	Ds	HV=50 PP=150,150,210						
		2.5								
		3.0		HV=50 PP=160,220,200			Test Pit TP-16 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-17**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352495 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787489 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low to medium plasticity, dark brown, with some clay, roots.	D-M	VSt	
						CH	CLAY: high plasticity, dark brown, trace roots.	M		
		0.5	Ds	HV=138 PP=300,300,500 520						
		1.0							St	
		1.5		HV=80 PP=300,300,280 310			mottled grey, orange and brown.		F-St	
		2.0	Ds				trace fine to medium grained sand.			
		2.5		HV=58 PP=200,150,150 180					St-VSt	
		3.0					Test Pit TP-17 terminated at 3m			DCP terminated at 3.1m
		3.5								
		4.0								

DCP (blows per 100mm): 5 10 15 20 25 30

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-18**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352848 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787110 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	Clayey SILT: low plasticity, dark brown, trace fine to medium grained sand.	D-M	St	
		0.5	Bs Ds	HV=55 PP=300,320,300 350		CH	CLAY: high plasticity, brown.			
		1.0					brown and grey.	M	VSt	
		1.5		HV=145 PP=410,450,500 350			mottled grey and orange.		St	
		2.0	Ds	HV=72 PP=280,350,380 350						
		2.5								
		3.0					Test Pit TP-18 terminated at 3.1m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests
- U_{50} Undisturbed sample 50mm diameter
- Ds Disturbed sample
- Bs Bulk sample
- E Environmental sample
- HV Hand vane (kPa)
- PP Pocket penetrometer (kPa)
- DB Double bouncing

Classification symbols and soil description based on unified classification system

Moisture
- D Dry
- M Moist
- W Wet

Consistency
- VS Very soft
- S Soft
- F Firm
- St Stiff
- VSt Very stiff
- H Hard
- Fb Friable

Density Index
- VL Very loose
- L Loose
- MD Medium dense
- D Dense
- VD Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-19**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352754 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786679 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown.	M		
		0.5	Ds	HV=50 PP=150,180,150,200						
		1.0					mottled grey and orange.		F	
		1.5		HV=40 PP=150,120,100,150					F-St	
		2.0	Ds	HV=48 PP=150,200,200,250					St-VSt	
		2.5								
		3.0					Test Pit TP-19 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-20**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352635 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786571 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, fine to medium grained sand, roots.	D-M	St	
		0.5	Ds	HV=85 PP=200,220,250,300		CH	CLAY: high plasticity, brown.	M		
		1.0								
		1.5		HV=68 PP=280,280,250,210			mottled grey and orange.		F-St	
		2.0	Ds	HV=48 PP=150,180,210,150			trace fine to coarse grained sand.		St-VSt	
		2.5								
		3.0					Test Pit TP-20 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-21**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352861 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786393 m** Datum: **MGA**

Sample/Test			Material Substance						
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St
		0.5	Ds	HV=85 PP=300,320,400 400		CH	CLAY: high plasticity, brown.	M	
		1.0					mottled grey and orange.		F-St
		1.5		HV=60 PP=200,210,210 250					
		2.0	Ds	HV=40 PP=150,150,180 200					St-VSt
		2.5							
		3.0					Test Pit TP-21 terminated at 3m		
		3.5							
		4.0							

DCP (blows per 100mm): 5 10 15 20 25 30

DCP terminated at 3.2m.

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-22**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked: CSL	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352660 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787051 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	Ds	HV=80 PP=250,200,250 300		CH	CLAY: high plasticity, brown with some grey.	M		
		1.0								
		1.5		HV=68 PP=250,300,250 220			mottled grey and orange.		F-St	
		2.0	Ds	HV=40 PP=150,200,200 180						
		2.5							St-VSt	
		3.0								
							Test Pit TP-22 terminated at 3.2m			DCP terminated at 3.2m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-23**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352648 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787238 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown, trace roots.	M		
		0.5	Bs	HV=55 PP=250,310,380 340						
		1.0					mottled grey and orange.			
		1.5		HV=85 PP=300,280,350 290					F-St	
		2.0	Ds	HV=50 PP=280,280,250 260						
		2.5							St	
		3.0					Test Pit TP-23 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-24**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352675 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786410 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	E			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	E Ds	HV=68 PP=250,250,400		CH	CLAY: high plasticity, brown, trace roots.	M		
		1.0					mottled grey and orange.			
		1.5	E Ds	HV=65 PP=290,220,290					F-St	
		2.0	Ds	HV=40 PP=150,150,180			with some fine to coarse grained sand.			
		2.5	Ds						St-VSt	
		3.0					Test Pit TP-24 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

DCP (blows per 100mm): 5 10 15 20 25 30

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-25**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352977 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786420 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	E				SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt	
			Ds					M		
						CH	CLAY: high plasticity, brown, trace roots.		St	
		0.5	E	HV=75 PP=210,250,300 300						
			Bs Ds							
		1.0					mottled grey and orange.			
		1.5	E	HV=60 PP=290,300,280 310						
		2.0	Ds	HV=58 PP=180,250,250 220			with some fine to coarse grained sand.		St-VSt	
		2.5								
		3.0					Test Pit TP-25 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-26**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **353044 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786514 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	Ds	HV=45 PP=150,150,180 160		CH	CLAY: high plasticity, brown, trace roots.	M	F-St	
		1.0					mottled grey and orange.			
		1.5		HV=35 PP=200,180,210 150						
		2.0	Ds	HV=38 PP=150,150,120 160			with some fine to coarse grained sand.			
		2.5							St-VSt	
		3.0					Test Pit TP-26 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-27**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **353037 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786882 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt
		0.5		HV=90 PP=350,350,450		CH	CLAY: medium plasticity, brown, trace roots.	M	St
			Bs Ds	310					
		1.0					mottled grey and orange.		
		1.5		HV=74 PP=250,310,310			280		
		2.0	Ds	HV=62 PP=150,150,200			180		St-VSt
		2.5							
		3.0					Test Pit TP-27 terminated at 3m		
		3.5							
		4.0							

DCP (blows per 100mm): 5 10 15 20 25 30

DCP terminated at 3.1m.

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-28**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352664 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787310 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds				SILT: low plasticity, dark brown, with some clay, roots.	D-M	VSt	
						CH	CLAY: high plasticity, brown, trace roots.	M	St-VSt	
		0.5		HV=130						
			Bs Ds	PP=450,600,600 300						
		1.0					mottled grey and orange.			
		1.5		HV=60 PP=300,290,310 240					F-St	
		2.0		HV=40						
			Ds	PP=150,180,150 200			trace fine to coarse grained sand.			
		2.5							St	
		3.0								DCP terminated at 3.1m.
							Test Pit TP-28 terminated at 3.2m			
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-29**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352754 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787366 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds				SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown, trace roots.	M		
		0.5	Ds	HV=140 PP=500,450,500 400						
		1.0					mottled grey and orange.		F-St	
		1.5		HV=65 PP=280,280,250 250						
		2.0	Ds	HV=40 PP=150,150,180 220			with some fine to coarse grained sand.			
		2.5							St-VSt	
		3.0					Test Pit TP-29 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

Appendix C

Test Pit Photographs

Appendix C Test Pit Photographs

Test Pit - TP–14

Test Pit - TP–15

Test Pit - TP–16

Test Pit - TP–17

Test Pit - TP–18

Test Pit - TP–19

Test Pit - TP–20

Test Pit - TP–21

Test Pit - TP–22

Test Pit - TP–23

Test Pit - TP–24

Test Pit - TP–25

Test Pit - TP–26

Test Pit - TP–27

Test Pit - TP–28

Test Pit - TP–29

Appendix D

Laboratory Test Certificates

Ground Science Pty Ltd

Factory 11, 8 - 20 Brock Street
Thomastown VIC 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

test results - Natural Moisture Content

client:	**AECOM AUSTRALIA PTY LTD (MELBOURNE)**	job No.	**GS2146/1**
project:	**HOMESTEAD ROAD & CENTRE ROAD - BERWICK WATERWAYS**	report No.	**AA**
location:	**BERWICK**	test date:	**09-Jun-10**

Sample Id	Depth m	Natural Moisture Content (%) AS 1289 2.1.1
1 (TP 10 - 15)	**1.3 - 1.5m**	**17.8**
2 (TP 10 - 15)	**2.0 - 2.2m**	**38.2**
3 (TP 10 - 17)	**0.5 - 0.6m**	**36.5**
4 (TP 10 - 17)	**2.0 - 2.2m**	**35.8**
5 (TP 10 - 20)	**0.5 - 0.7m**	**28.6**
6 (TP 10 - 20)	**2.0 - 2.2m**	**32.0**

Coments

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The results of the tests, calibrations and/or measurements included
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NATA Accredited Laboratory No. 15055

Date of issue
15/06/2010

Approved Signatory

Ernst Gmehling

Ground Science

Ground Science Pty Ltd ABN 31 105 704 078
Factory 11, 8 - 20 Brock Street Thomastown Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

CALIFORNIAN BEARING RATIO

client	**AECOM AUSTRALIA PTY LTD (Melbourne)**	job no :	**GS2146/1**
project	**BERWICK WATERWAYS**	test date :	**15-Jun-10**
location	**BERWICK**	Report No.	**AJ**

Sample Number		# 7 TP10-25	# 8 TP10 - 28	# 9 TP10 - 27	
Date Sampled		-	-	-	
Depth		0.5 - 0.7m	0.5 - 0.7m	0.45 - 0.7m	
Offset					
Level					
Laboratory Compaction AS1289 5.1.1 standard					
Oversize Material 19mm Sieve	%	0	0	0	
Maximum Dry Density	t/m^3	1.56	1.44	1.44	
Optimum Moisture Content	%	24.0	29.0	28.0	
Field Moisture Content	%	26.8	31.6	34.0	
Test Results AS 1289 6.1.1					
Before Soaking	Dry Density t/m^3	1.55	1.43	1.44	
	Moisture Ratio %	103.5	102.0	101.0	
	Density Ratio %	99.5	99.5	99.5	
After Soaking	Dry Density t/m^3	1.53	1.41	1.41	
	Moisture Content %	27.8	31.9	32.5	
Moisture Content after test - remainder	%	25.0	24.4	28.6	
Moisture Content after test - top 30mm	%	25.2	29.8	31.0	
Number of days soaking	days	4	4	4	
Mass of Surcharge	kg	5.5	5.5	5.5	
Swell after soaking (4 days)	%	1.0	1.5	2.0	
CBR penetration	mm	2.5	2.5	2.5	
CBR VALUE	**%**	**6**	**3.5**	**6**	

Material Description :	# 7	CLAY, high plasticity, dark brown
	# 8	CLAY, high plasticity, black
	# 9	CLAY, high plasticity, black

Test Methods: AS1289 6.1.1, 5.1.1 Sampling : BY CLIENT TESTED AS RECEIVED

NATA
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NATA Accredited Laboratory No. 15055

Ernst Gmehling
Approved Signatory
Date 17-Jun-10

Ground Science Pty Ltd

Factory 11, 8 - 20 Brock Street
Thomastown VIC 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

test results - Atterberg Limits

client:	**AECOM**	job No.	**GS2146/1**
project:	**BERWICK WATERWAYS**	report No.	**AH**
location:	**BERWICK**	test date:	**15-Jun-10**

Sample identification		**TP 10 - 15 1.3 - 1.5m**	**TP 10-15 2.0 - 2.2m**	**TP 10 - 17 0.5 - 0.6m**	**TP 10 - 17 2.0 - 2.2m**
Sample Number / Depth		**# 1**	**# 2**	**# 3**	**# 4**
Test procedure		AS1289 3.1.2,3.2.1,3.3.1,3.4.1, 2.1.1			
ATTERBERG LIMITS					
Liquid Limit	%	**98**	**99**	**99**	**85**
Plastic limit	%	**22**	**27**	**26**	**22**
Plasticity Index	%	**76**	**72**	**73**	**63**
Linear Shrinkage	%	**22.5**	**19.5**	**21.5**	**20**
curling /crumbling/cracking		**curling**	**curling**	**curling**	**curling**
sample history		oven dried, dry sieved			
Designation		**high**	**high**	**high**	**high**

Coments sampled by client tested as received

ACCREDITED FOR TECHNICAL COMPETENCE

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NATA Accredited Laboratory No. 15055

21/06/2010
Date of issue

Approved Signatory

Ernst Gmehling

Ground Science Pty Ltd

Factory 11, 8 - 20 Brock Street
Thomastown VIC 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

test results - Atterberg Limits

client:	**AECOM**	job No.	**GS2146/1**
project:	**BERWICK WATERWAYS**	report No.	**AG**
location:	**BERWICK**	test date:	**15-Jun-10**

Sample identification		**TP 10-20 0.5 - 0.7m**	**TP 10-20 2.0 - 2.2m**
Sample Number / Depth		**# 5**	**# 6**
Test procedure		AS1289 3.1.2,3.2.1,3.3.1,3.4.1, 2.1.1	
ATTERBERG LIMITS			
Liquid Limit	%	**76**	**74**
Plastic limit	%	**20**	**17**
Plasticity Index	%	**56**	**57**
Linear Shrinkage	%	**17**	**22**
curling /crumbling/cracking		**all**	**none**
sample history		oven dried, dry sieved	
Designation		**HIGH**	**HIGH**

Coments sampled by client tested as received

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Ground Science Pty Ltd

Factory 11 8 - 20 Brock Street, Thomastown, Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM AUSTRALIA PTY LTD**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**10/06/2010**
location:	**BERWICK**	Report No.	**AC**

sample identification: #1 (TP 10-15 @ 1.5 - 1.5m) start time : 13:50

does the sample slake
- [X] no → [X] **7** sample swells
- [ ] yes → [ ] **8** no swell

time dispersion commences
start :
end:
- [ ] **1** complete dispersion
- [ ] **2** partial dispersion
- [ ] no dispersion

remoulded sample
- [ ] **3** dispersion

time dispersion commences
start :
end:
- [ ] no dispersion

calcium / gypsum present
- [ ] **4** present
- [ ] absent

5 :1 water: soil mix
10 mins of vigorous shaking
- [ ] **5** disperses (remains cloudy)
- [ ] **6** floculates (clear at surface)

water type: *DISTIILED*
water temp : $17^{O}c$
description : CLAY, high plasticity, brown

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

7

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Approved signature
date: 15/06/10

Ernst Gmehling

Ground Science Pty Ltd

Factory 11 8 - 20 Brock Street, Thomastown, Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM PTY LTD (AUSTRALIA)**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**17/06/2010**
location:	**BERWICK**	Report No.	**AD**

sample identification: **#2 (TP10-15 @ 2.0 - 2.2m)** start time : 2:30

does the sample slake

- [ ] no → **7** sample swells
- [x] yes → **8** no swell

time dispersion commences
start : 2:45
end: 2:55

- [ ] **1** complete dispersion
- [x] **2** partial dispersion
- [ ] no dispersion

remoulded sample

- [ ] **3** dispersion
- [ ] no dispersion

time dispersion commences
start :
end:

calcium / gypsum present

- [ ] **4** present
- [ ] absent

5 :1 water: soil mix
10 mins of vigorous shaking

- [ ] **5** disperses (remains cloudy)
- [ ] **6** floculates (clear at surface)

water type: *DISTILLED*
water temp : $17^{O}C$
description : CLAY, high plasticity, yellow/grey

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

2

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Approved signature
date: 17/06/10

Ernst Gmehling

Ground Science Pty Ltd

Factory 11 8 - 20 Brock Street, Thomastown, Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM AUSTRALIA PTY LTD**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**10/06/2010**
location:	**BERWICK**	Report No.	**AB**

sample identification: #3 (TP 10-17 @ 0.5 - 0.6m) — start time : 13:50

does the sample slake — [X] no → [X] **7** sample swells; [ ] yes → [ ] **8** no swell

time dispersion commences
start :
end:

- [ ] **1** complete dispersion
- [ ] **2** partial dispersion
- [ ] no dispersion

remoulded sample

- [ ] **3** dispersion
- [ ] no dispersion

time dispersion commences
start :
end:

calcium / gypsum present

- [ ] **4** present
- [ ] absent

5 :1 water: soil mix
10 mins of vigorous shaking

- [ ] **5** disperses (remains cloudy)
- [ ] **6** floculates (clear at surface)

water type: *DISTIILED*
water temp : $17^{O}c$
description : CLAY, high plasticity, brown

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

7

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NATA Accredited Laboratory No. 15055

Approved signature
date: 15/06/10

Ernst Gmehling

Ground Science Pty Ltd

Factory 11 8 - 20 Brock Street, Thomastown, Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM PTY LTD (AUSTRALIA)**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**11/06/2010**
location:	**BERWICK**	Report No.	**AE**

sample identification: **#4 (TP10-17 @ 2.0 - 2.2m)** start time : 2:30

does the sample slake
- [ ] no → [ ] **7** sample swells
- [x] yes → [ ] **8** no swell

time dispersion commences
start :
end:

- [ ] **1** complete dispersion
- [ ] **2** partial dispersion
- [x] no dispersion

remoulded sample

- [ ] **3** dispersion

time dispersion commences
start :
end:

- [x] no dispersion

calcium / gypsum present

- [ ] **4** present
- [x] absent

5 :1 water: soil mix
10 mins of vigorous shaking

- [x] **5** disperses (remains cloudy)
- [ ] **6** floculates (clear at surface)

water type: *DISTILLED*
water temp : 17^{O}C
description : CLAY, high plasticity, yellow/grey

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

5

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NATA Accredited Laboratory No. 15055

Approved signature
date: 17/06/10

Ernst Gmehling

Ground Science Pty Ltd

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Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM PTY LTD (AUSTRALIA)**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**11/06/2010**
location:	**BERWICK**	Report No.	**AF**

sample identification: **#5 (TP10-20 @ 0.5 - 0.7m)** start time : 2:30

does the sample slake

- [x] no → [ ] **7** sample swells
- [ ] yes → [x] **8** no swell

time dispersion commences
start :
end:

- [ ] **1** complete dispersion
- [ ] **2** partial dispersion
- [ ] no dispersion

remoulded sample

- [ ] **3** dispersion

time dispersion commences
start :
end:

- [ ] no dispersion

calcium / gypsum present

- [ ] **4** present
- [ ] absent

5 :1 water: soil mix
10 mins of vigorous shaking

- [ ] **5** disperses (remains cloudy)
- [ ] **6** floculates (clear at surface)

water type: *DISTILLED*
water temp : $17^{O}C$
description : CLAY, high plasticity, brown

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

8

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Approved signature
date: 17/06/10

Ernst Gmehling

Ground Science Pty Ltd

Factory 11 8 - 20 Brock Street, Thomastown, Vic 3074
Ph (03) 9464 4617 Fax (03) 9464 4618

EMERSON DISPERSION

AS 1289 3.8.1

client:	**AECOM PTY LTD (AUSTRALIA)**	job No. :	**GS2146/1**
project:	**BERWICK WATERWAYS**	date:	**17/06/2010**
location:	**BERWICK**	Report No.	**AG**

sample identification: **#6 (TP10-20 @ 2.0 - 2.2m)** start time : 3:00

does the sample slake
- [ ] no → **7** sample swells
- [x] yes → **8** no swell

time dispersion commences
start :
end:

- [ ] **1** complete dispersion
- [ ] **2** partial dispersion
- [x] no dispersion

remoulded sample

- [ ] **3** dispersion

time dispersion commences
start :
end:

- [x] no dispersion

calcium / gypsum present

- [ ] **4** present
- [x] absent

5 :1 water: soil mix
10 mins of vigorous shaking

- [ ] **5** disperses (remains cloudy)
- [x] **6** floculates (clear at surface)

water type: *DISTILLED*
water temp : $17^{O}C$
description : CLAY, high plasticity, yellow/grey

sampling date: sampled by client, tested "as received"

EMERSON CLASS NUMBER

6

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NATA Accredited Laboratory No. 15055

Approved signature
date: 17/06/10

Ernst Gmehling

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1006190**	Page	: 1 of 3
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: KISINA SOFELE	Contact	: Steven McGrath
Address	: LEVEL 9, 8 EXHIBITION ST MELBOURNE VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kisina.sofele@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 96531234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 96547117	Facsimile	: +61-3-8549 9601
Project	: 60156173 BERWICK WATER	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 60156173		
C-O-C number	: ----	Date Samples Received	: 08-JUN-2010
Sampler	: KS	Issue Date	: 16-JUN-2010
Site	: HOMESTEAD RD & CENTRE RD		
		No. of samples received	: 4
Quote number	: EN-004-09 BQ	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Instrument Chemist	Inorganics
Snezana Vanovac	Laboratory Technician	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ED045-S: EM1006190 #1,2,3,4 samples required dilution for Chloride-Soluble prior to analysis due to sample matrix. LOR values have been adjusted accordingly.**

Analytical Results

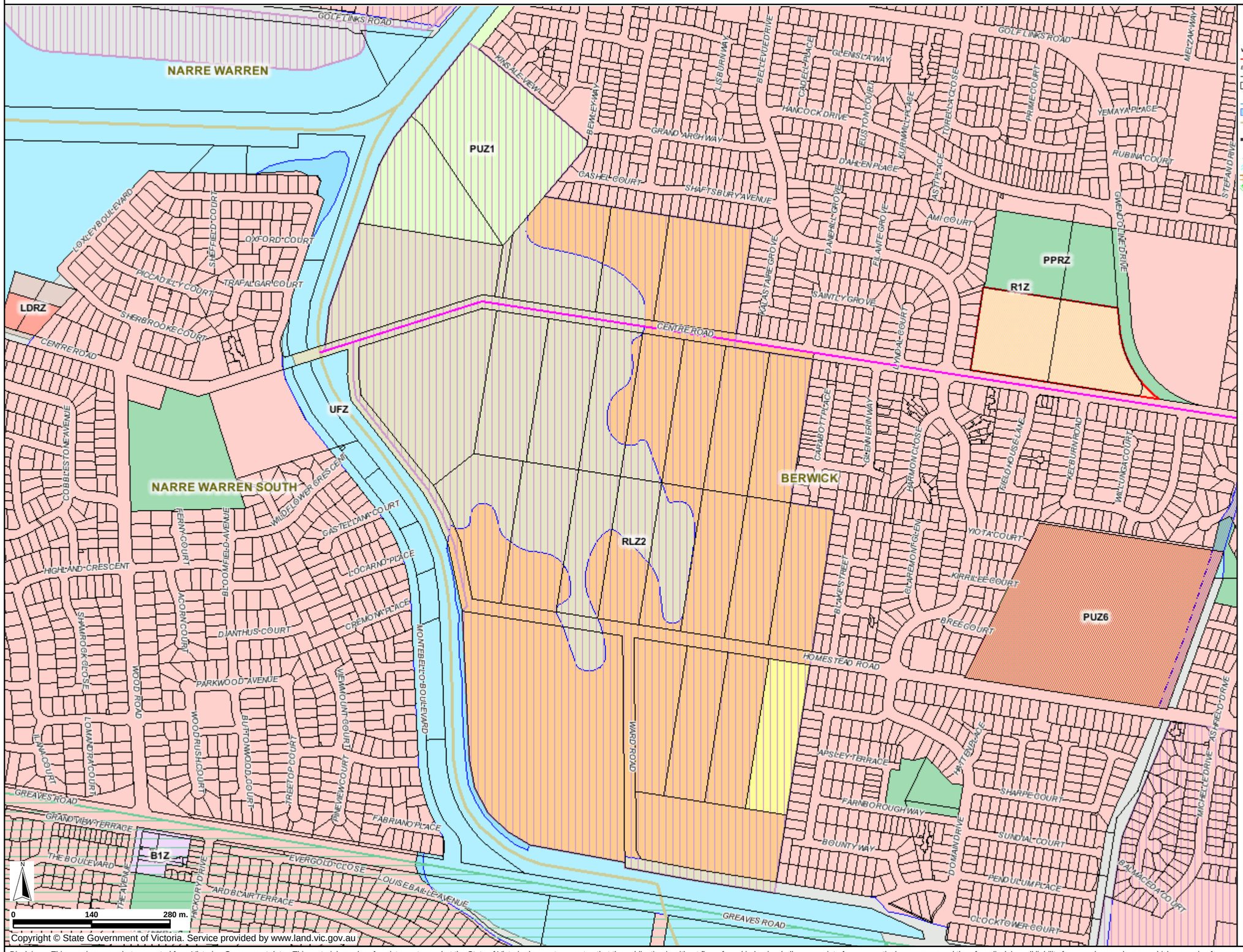
Sub-Matrix: SOIL			Client sample ID	TP10 - 19 0.5 - 0.7M	TP10 - 23 0.5 - 0.7M	TP10 - 16 2.0 - 2.2M	TP10 - 25 2.0 - 2.2M	----
			Client sampling date / time	07-JUN-2010 15:00	07-JUN-2010 15:00	07-JUN-2010 15:00	07-JUN-2010 15:00	----
Compound	CAS Number	LOR	Unit	EM1006190-001	EM1006190-002	EM1006190-003	EM1006190-004	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**5.2**	**7.2**	**6.3**	**5.8**	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**59**	**10**	**66**	**101**	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**23.8**	**28.9**	**26.2**	**24.3**	----
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Sulfate as SO4 2-	14808-79-8	50	mg/kg	**230**	**60**	**120**	**270**	----
ED045: Chloride								
Chloride	16887-00-6	10	mg/kg	<20	<20	<20	<20	----

Appendix B

Planning Information

Planning Map
Berwick Waterways

Department of
Planning and
Community Development



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Legend

- WARRNAMBOOL — Major Town
- Major Road, Road
- BOURKE STREET — Road name
- Railway, Tramway
- Property/Parcel, Selected
- 25 2 1C — Address, Lot, Crown allotment
- River, Stream, Coastline
- Waterbody
- Locality
- SEDDON — Locality name
- Local Government Area
- BRIMBANK — Local Government Name
- Urban Growth Bdy (UGB)
- Area outside the UGB
- Investigation Area
- Land added to UGB since 2005
- Airport Environs
- City Link Project
- Development Contributions Plan
- Design & Development
- Design & Development Part
- Development Plan
- Environmental Audit
- Erosion Management
- Environmental Significance
- Floodway
- Heritage
- Incorporated Plan
- Land Subject to Inundation
- Melbourne Airport Environs 1
- Melbourne Airport Environs 2
- Neighbourhood Character
- Public Acquisition
- Restructure
- Road Closure
- Special Building
- Significant Landscape
- Salinity Management
- State Resource
- Vegetation Protection
- Wildfire Management

ZONES

- B1Z - Business 1
- B2Z - Business 2
- B3Z - Business 3
- B4Z - Business 4
- B5Z - Business 5
- CA - Commonwealth Land (not in scheme)
- CCZ - Capital City
- CDZ - Comprehensive Development
- DZ - Dockland
- ERZ - Environmental Rural
- FZ - Farming
- GWAZ - Green Wedge A
- GWZ - Green Wedge
- IN1Z - Industrial 1
- IN2Z - Industrial 2
- IN3Z - Industrial 3
- LDRZ - Low Density Residential
- MUZ - Mixed Use
- PCRZ - Public Conservation & Resource
- PDZ - Priority Development
- PPRZ - Public Park & Recreation
- PUZ1 - Public Use - Service & Utility
- PUZ2 - Public Use - Education
- PUZ3 - Public Use - Health Community

Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of data.

Scale 1:6,712

Printed: March 17, 2010

Victoria
The Place To Be

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www.aecom.com

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 50 100 150 200

metres

1:5,000 when printed at A3

Legend

- Test Pit/ Soil Stockpile Sample
- Site Boundary

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TEST PIT LOCATION PLAN

Growth Areas Authority

Preliminary Geotechnical Site Investigation

PSP No.09 - Berwick Waterways
Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	ART 14 Dec 2010

Figure

A2

Map Document: \\aumel1fp001\ENSR_GIS\GISMEL\60156173_GAA_Berwick\01\ArcGIS\Geotech Inv Dec 10\60156173_FigA2_SoilSampleLocations_14Dec10.mxd

A3 size

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Appendix C

Certificates of Title

Number: **10422813**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10532/835**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584914M Volume 10532 Folio 835

Produced 04/05/2010 03:14 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10532 FOLIO 835

Security no : 124033584912P
Produced 04/05/2010 03:14 pm

LAND DESCRIPTION
Lot A on Plan of Subdivision 430080B.
PARENT TITLE Volume 10491 Folio 996
Created by instrument W703497K 04/04/2000

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
MELBOURNE WATER CORPORATION of 607 BOURKE ST. MELBOURNE 3000
X370160D 19/03/2001

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS430080B FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 187 GOLF LINKS ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2243
Melb 3001
(DX 304)
Ph. 9629 3011

PLAN OF SUBDIVISION

STAGE No.	LTO USE ONLY	PLAN NUMBER
	EDITION 2	PS 430080 B

LOCATION OF LAND

PARISH: BERWICK

TOWNSHIP: -

SECTION: 4

CROWN ALLOTMENT: 36

CROWN PORTION: -

LTO BASE RECORD: CHART37
TITLE REFERENCES: VOL.8504 FOL.629

LAST PLAN REFERENCE/S: BP324

POSTAL ADDRESS: 145 GOLF LINKS ROAD
(At time of subdivision) BERWICK

AMG Co-ordinates
(of approx centre of land in plan) E 352700 N 5787800 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

COUNCIL NAME: CITY OF CASEY REF: S99/191S

1. This plan is certified under Section 6 of the Subdivision Act 1988.
~~2. This plan is certified under Section 11(7) of the Subdivision Act 1988.~~
~~Date of original certification under Section 6. / /~~
3. This is a statement of compliance issued under Section 21 of the Subdivision Act 1988.

OPEN SPACE

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 ~~has~~/has not been made.
~~(ii) The requirement has been satisfied~~
~~(iii) The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 21 / 10 / 99

Re-certified under Section 11(7) of the Subdivision Act 1988.
Council Delegate
Council Seal
Date / /

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
NIL	NIL

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision.
Planning permit No.

DEPTH LIMITATION 15.24m. below the surface

SURVEY. THIS PLAN IS/~~IS NOT~~ BASED ON SURVEY

THIS SURVEY HAS BEEN CONNECTED TO PERMANENT MARKS No.(s)
IN PROCLAIMED SURVEY AREA No. 45

EASEMENT INFORMATION

LEGEND A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1	SEWERAGE	2.40	INST. K269556	MMBW
E-2	CONDITION IN CROWN GRANT VOL.8504 FOL.629 FOR DRAINAGE AND OTHER PURPOSES.	8.05	CROWN GRANT VOL.8504 FOL.629	ADJACENT LAND OR AN AUTHORITY AS SET OUT IN CROWN GRANT VOL.8504 FOL.629
E-3	SEWERAGE	See Diagram	X946831G	SOUTH EAST WATER LTD

LTO USE ONLY

STATEMENT OF COMPLIANCE/
EXEMPTION STATEMENT

RECEIVED ☑

DATE 9 / 12 / 99

LTO USE ONLY

PLAN REGISTERED

TIME 4.40 PM

DATE 12 / 1 / 2000

R.Hills

Assistant Registrar of Titles

SHEET 1 OF 2 SHEETS

KLM DEVELOPMENT CONSULTANTS
LEVEL 3, 47 PRINCES HWY
DANDENONG, 3175
PH. (03) 9794-9438

LICENSED SURVEYOR (PRINT) ... JAMES ANDREW DEA

SIGNATURE ..... DATE 5 / 10 / 99

REF 2240 VERSION 2

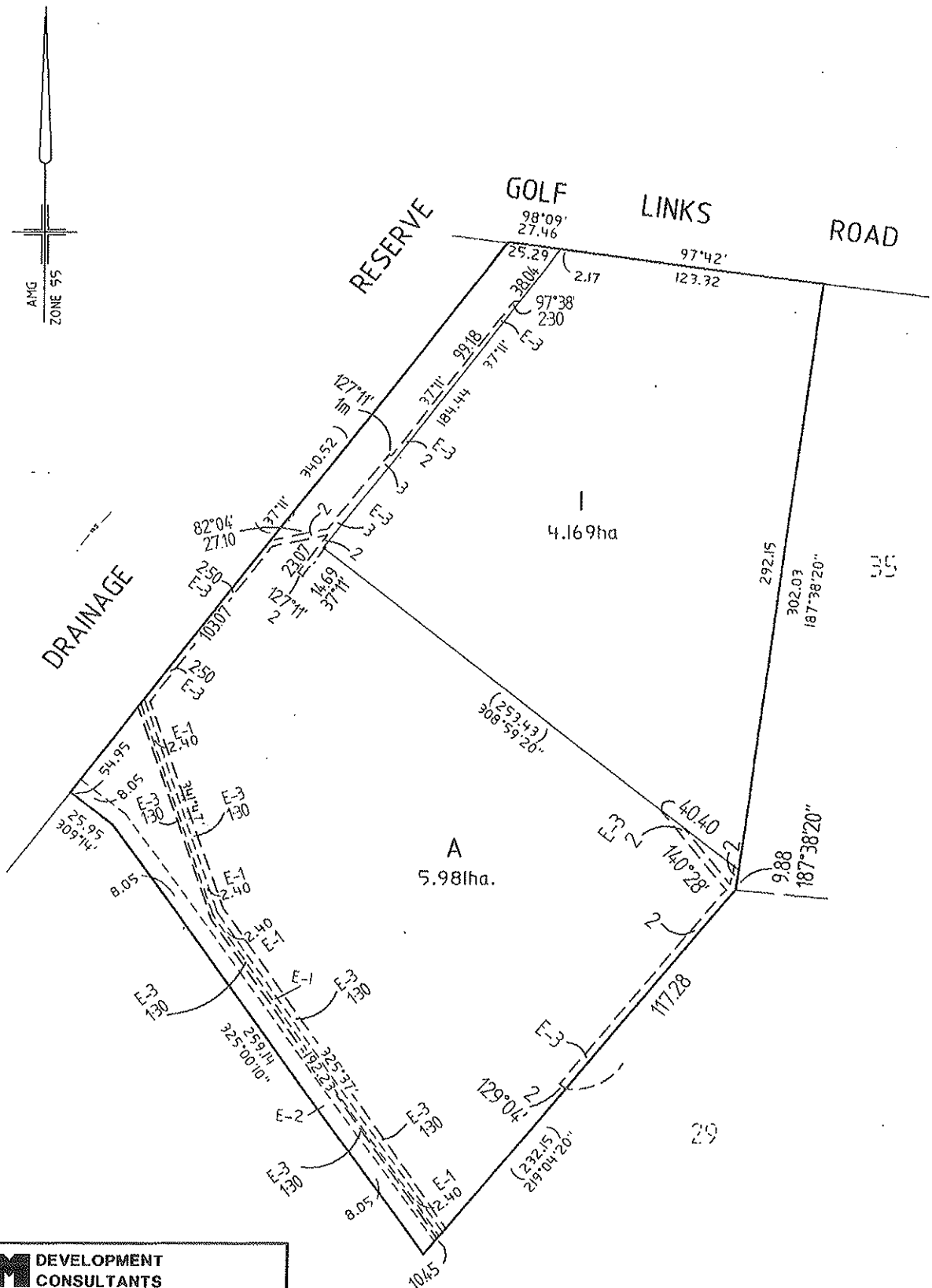
DATE 21 / 10 / 99

COUNCIL DELEGATE SIGNATURE

ORIGINAL SHEET SIZE A3

PLAN OF SUBDIVISION

STAGE No.	PLAN NUMBER
	PS 430080 B



KLM DEVELOPMENT CONSULTANTS
LEVEL 3, 47 PRINCES HWY
DANDENONG, 3175
PH. (03) 9794-9438

SCALE	ORIGINAL SCALE	ORIGINAL SHEET SIZE	LICENSED SURVEYOR (PRINT)	SHEET 2 OF 2 SHEETS
20 0 20 40 60 80 100 LENGTHS ARE IN METRES	1:2000	A3	JAMES A. DEA	
			SIGNATURE ..... DATE / /	..... DATE / / COUNCIL DELEGATE SIGNATURE
			REF 2240 VERSION 2	

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

PS430080B

AFFECTED LAND/PARCEL	LAND/PARCEL IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot A	E-3	Creation of Easement	X946831G			2	
		WARNING: THE IMAGE OF THIS PLAN/DOCUMENT HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL PLAN/DOCUMENT.					

PS430080B, Page 3 of 3, Printed 15:14 04/05/2010, Search Enquiry 0422813, Customer 13500

Number: **10422815**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10214/176**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584920F Volume 10214 Folio 176

Produced 04/05/2010 03:14 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10214 FOLIO 176

Security no : 124033584916K
Produced 04/05/2010 03:14 pm

LAND DESCRIPTION
Reserve 1 on Plan of Subdivision 336088J.
PARENT TITLE Volume 08891 Folio 662
Created by instrument T478448X 22/12/1994

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
MELBOURNE WATER CORPORATION
T478448X 22/12/1994

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS336088J FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 322W-340W CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2548
Melb 3001
(DX 304)
Ph. 9629 3111

PLAN OF SUBDIVISION

UNDER SECTION 35 OF THE SUBDIVISION ACT 1988

STAGE No.	LTO USE ONLY	PLAN NUMBER
—	EDITION 2	PS 336088 J

LOCATION OF LAND

PARISH: BERWICK

TOWNSHIP: —

SECTION: 4

CROWN ALLOTMENT: 29 (PART)

CROWN PORTION: —

LTO BASE RECORD: CHART 37(2131)
TITLE REFERENCES: VOL. 8891 FOL. 662

LAST PLAN REFERENCE/S: LP 92396 LOT 1

POSTAL ADDRESS: (At time of subdivision) CENTRE ROAD BERWICK, 3806

AMG Co-ordinates (of approx centre of land in plan) E 352 500 N 5787 450 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

Council Name: CITY OF BERWICK Ref:1640.322.SS

A This is a plan under section 35 of the *Subdivision Act* 1988 which does not create any additional lots.

B This plan is exempt from Part 3 of the *Subdivision Act* 1988.

~~C This is a plan under section 35 of the *Subdivision Act* 1988 which creates (an) additional lot(s).~~

D It is certified under section 6 of the *Subdivision Act* 1988.

~~E It is certified under section 11 (7) of the *Subdivision Act* 1988.~~

~~F Date of original certification under section 6. / /~~

G This is a Statement of Compliance under section 21 of the *Subdivision Act* 1988.

(Council delegate)
~~(Council seal)~~
(Date of Certification)

VESTING OF ROADS AND/OR RESERVES

Roads and reserves vest in the council/body/person named when the appropriate vesting date is recorded or transfer registered.

IDENTIFIER	COUNCIL/BODY/PERSON
RESERVE No. 1	MELBOURNE WATER CORPORATION

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision.
Planning Permit No. —

DEPTH LIMITATION 15.24m BELOW THE SURFACE

RESERVE No. 1 ONLY IS SUBJECT TO SURVEY.

Land to be acquired by agreement RESERVE No. 1
~~Land to be acquired by compulsory process:~~

All the land is to be acquired free from all encumbrances other than any easements specified on this plan.

Survey: This plan is/~~is not~~ based on survey.
To be completed where applicable.
This survey has been connected to permanent marks no.s —
In Proclaimed Survey Area No. 45

EASEMENT INFORMATION

Easements marked (+) are created upon registration of this plan.
Easements marked (*) are created when the appropriate vesting date is recorded or transfer registered.
Easements marked (#) are removed when the appropriate vesting date is recorded or transfer registered.

LEGEND A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Symbol	Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
—	—	—	—	—	—

LTO USE ONLY

STATEMENT OF COMPLIANCE/ EXEMPTION STATEMENT

RECEIVED ☑

DATE: 22 / 7 / 94

LTO USE ONLY

PLAN REGISTERED

TIME 2.00 (PM)

DATE 26 / 8 / 94

Assistant Registrar of Titles

SHEET 1 OF 2 SHEETS

P. G. Speedie & Associates Pty. Ltd.
SURVEYORS, ENGINEERS, PLANNERS AND DEVELOPMENT CONSULTANTS
9 Queen Street, Melbourne. Vic. 3000 Ph: (03)629 1579
53 Victoria Street, Hastings. Vic. 3915 Ph: (059)79 1855

LICENSED SURVEYOR (PRINT) Andrew M. LOVELOCK

SIGNATURE ..... DATE 23/06/94

REF 5483 VERSION 1

DATE / /

COUNCIL DELEGATE SIGNATURE

ORIGINAL SHEET SIZE A3

Creffields PS06

PLAN OF SUBDIVISION

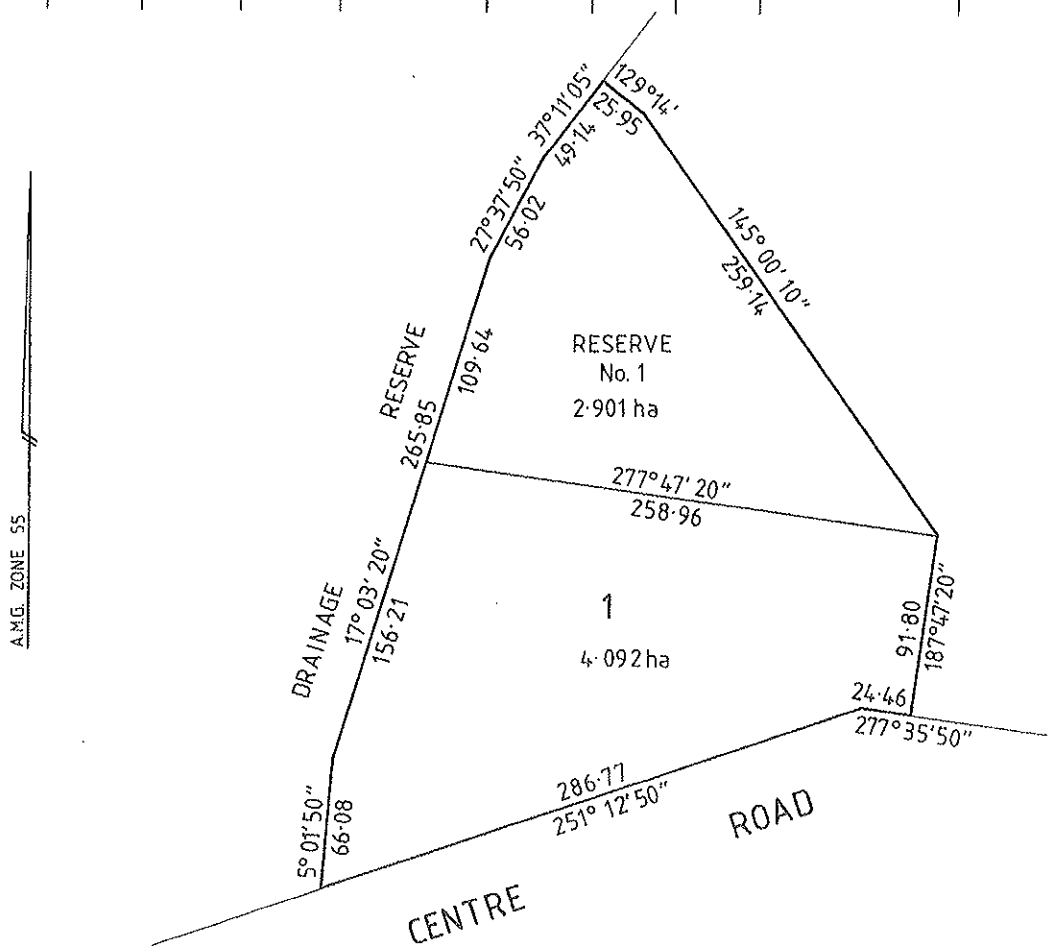
UNDER SECTION 35 OF THE SUBDIVISION ACT 1988

STAGE No. —

PLAN NUMBER **PS 336088 J**

VESTING DATES & TRANSFER REGISTRATION DATES OF ACQUIRED LAND

Land affected	Land acquired by compulsory process prior to certification			Land acquired by compulsory process after registration of plan				Land acquired by agreement	LTO reference of transfers or notifications of vesting dates	Assistant Registrar of Titles Signature
	Vesting date	Gov't Gaz.		Date of recording of vesting date	Vesting date	Gov't Gaz.		Date of registration of transfer		
		Page	Year			Page	Year			
RESERVE No. 1	—	—	—	—	—	—	—	22-12-94	T478448X	ZHO



P. G. Speedie & Associates Pty. Ltd.
SURVEYORS, ENGINEERS, PLANNERS AND DEVELOPMENT CONSULTANTS
9 Queen Street, Melbourne. Vic. 3000 Ph: (03)629 1579
53 Victoria Street, Hastings. Vic. 3915 Ph: (059)79 1655

SCALE	ORIGINAL SCALE	ORIGINAL SHEET SIZE	LICENSED SURVEYOR (PRINT) Andrew M. LOVELOCK	SHEET 2 OF 2 SHEETS
25 0 25 50 75 100 125 LENGTHS ARE IN METRES	1:2500	A3	SIGNATURE ..... DATE 23/06/94	DATE / /
			REF 5483 VERSION 1	COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 mm

Creffields PS05

MODIFICATION TABLE
RECORD OF ALL ADDITIONS OR CHANGES
TO THE PLAN

PLAN NUMBER
PS336088J

LAND	MODIFICATION	DEALING REFERENCE	DATE AND TIME ENTERED		NEW EDITION NUMBER	SIGNATURE OF ASSISTANT REGISTRAR OF TITLES
			DATE	TIME		
Res 1	VESTING	T478448X	22-12-94		2	

PS336088J, Page 3 of 3, Printed 15:14 04/05/2010, Search Enquiry 0422815, Customer 13500

Number: **10422821**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL_NEWELL**	**Title 10162/787**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584945D Volume 10162 Folio 787

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10162 FOLIO 787

Security no : 124033584943F
Produced 04/05/2010 03:14 pm

LAND DESCRIPTION
Lot 1 on Plan of Subdivision 314788C.
PARENT TITLE Volume 09358 Folio 940
Created by instrument PS314788C 31/03/1994

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
GRISTALL PTY LTD of 7 TUILERIES RISE NARRE WARREN SOUTH VIC 3805
AD641904E 26/05/2005

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AE486813L 17/07/2006
WESTPAC BANKING CORPORATION

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS314788C FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 342-350 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX [illegible]
Melb 3001
(DX 301)
Ph. 9629 351[illegible]

PLAN OF SUBDIVISION

STAGE No.	LTO USE ONLY	PLAN NUMBER
/	EDITION 2	PS 314788 C

LOCATION OF LAND

PARISH: BERWICK

TOWNSHIP: —

SECTION: 4

CROWN ALLOTMENT: 29 (PART)

CROWN PORTION: —

LTO BASE RECORD: LITHO (2131)
TITLE REFERENCES: VOL. 9358 FOL. 940

LAST PLAN REFERENCE/S: L.P. 124970 LOT 1

POSTAL ADDRESS: CENTRE ROAD
(At time of subdivision) BERWICK

AMG Co-ordinates
(of approx centre of land in plan) E 352 680
N 5 787 500 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

COUNCIL NAME: CITY OF BERWICK REF: 1640.342.55.01

~~1. This plan is certified under Section 6 of the Subdivision Act 1988.~~

2. This plan is certified under Section 11(7) of the Subdivision Act 1988
Date of original certification under Section 6. 14 / 2 / 92

~~3. This is a statement of compliance issued under Section 21 of the Subdivision Act 1988.~~

OPEN SPACE

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has/~~has not~~ been made.

(ii) The requirement has been satisfied. for Lot 1 only.

~~(iii) The requirement is to be satisfied in Stage .....~~

~~Council Delegate~~
~~Council Seal~~
~~Date 14 / 2 / 92~~

Re-certified under Section 11(7) of the Subdivision Act 1988
Council Delegate
~~Council Seal~~
Date 21 / 5 / 92

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
RESERVE No. 1	MELBOURNE WATER CORPORATION

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision
Planning permit No P. 301/92

DEPTH LIMITATION 15·24 METRES BELOW THE SURFACE.

SURVEY THIS PLAN IS/~~IS NOT~~ BASED ON SURVEY

THIS SURVEY HAS BEEN CONNECTED TO PERMANENT MARKS No (s)
IN PROCLAIMED SURVEY AREA No.

EASEMENT INFORMATION

LEGEND A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT. VOL.6971 FOL.051	SEE PLAN	CROWN GRANT VOL. 6971 FOL. 051	SEE CROWN GRANT VOL.6971 FOL.051
E-2	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT. VOL.6971 FOL.051	SEE PLAN	CROWN GRANT VOL. 6971 FOL. 051	SEE CROWN GRANT VOL. 6971 FOL.051
	SEWERAGE	SEE PLAN	INST. K600194	M.M.B.W.
E-3	SEWERAGE	2·50	INST. K600194	M. M.B.W.
E-4	DRAINAGE	5	THIS PLAN	MELBOURNE WATER
E-5	DRAINAGE	5	THIS PLAN	MELBOURNE WATER
	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT VOL.6971 FOL.051		CROWN GRANT VOL.6971 FOL.051	SEE CROWN GRANT VOL.6971 FOL.051
E-6	SEWERAGE	2·50	INST K600194	M.M.B.W.
	DRAINAGE		THIS PLAN	MELBOURNE WATER

LTO USE ONLY
STATEMENT OF COMPLIANCE/ EXEMPTION STATEMENT
RECEIVED ☑
DATE: 28 / 3 / 94

LTO USE ONLY
PLAN REGISTERED
TIME
DATE 31 / 3 / 94
J. Sragomni
Assistant Registrar of Titles

SHEET 1 OF 2 SHEETS

KLM DEVELOPMENT CONSULTANTS
4/50 THOMAS ST.
DANDENONG. 3175
PH.(03) 794 9438

LICENSED SURVEYOR (PRINT) STEPHEN J. McCARTHY
SIGNATURE ..... DATE 14 / 1 / 92
REF 19092 VERSION 3

DATE 21 / 5 / 92
COUNCIL DELEGATE SIGNATURE
ORIGINAL SHEET SIZE A3

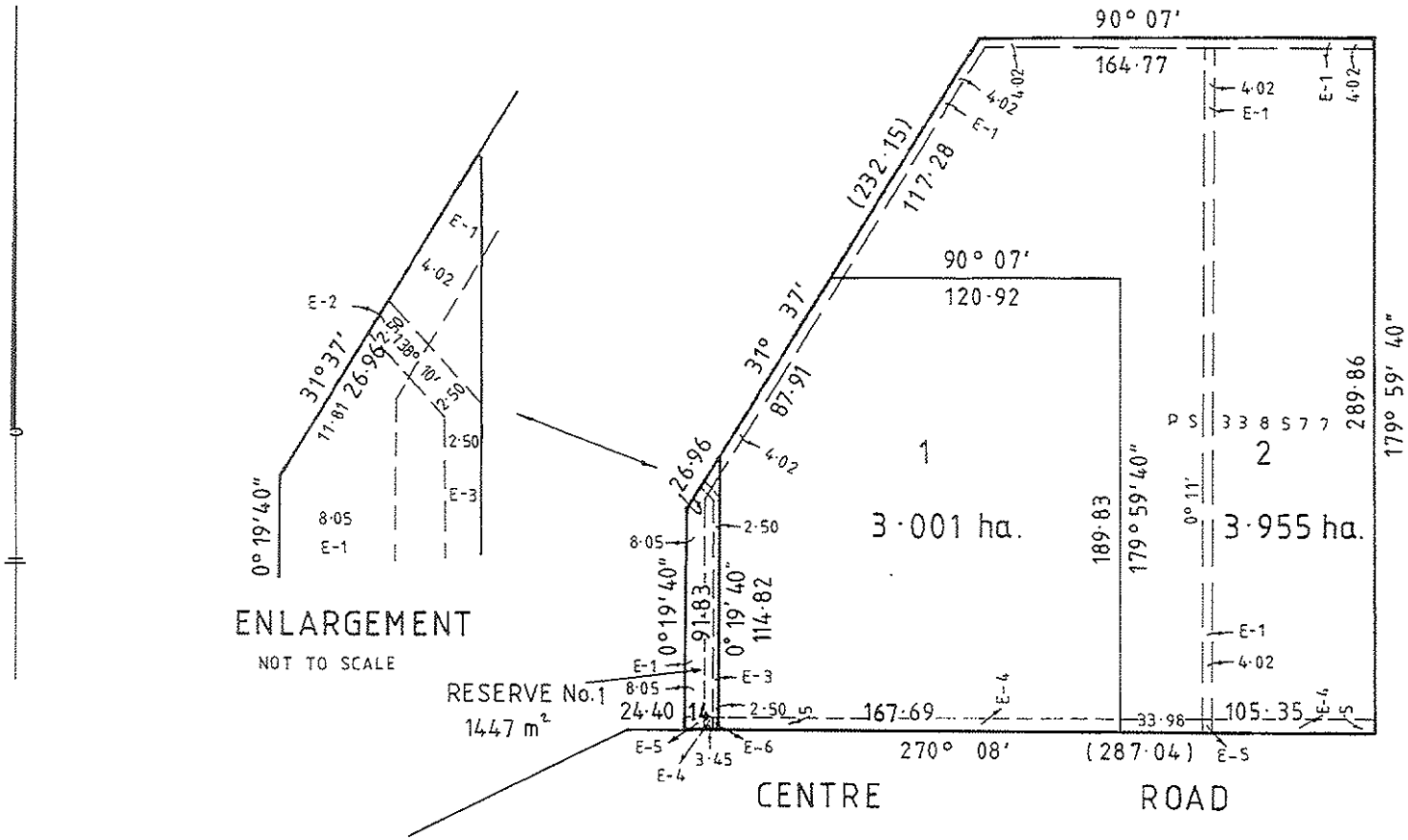
Cmffield PS01

PS314788C, Page 2 of 3, Printed 15:14 04/05/2010, Search Enquiry 0422820, Customer 13500

PLAN OF SUBDIVISION

STAGE No. /

PLAN NUMBER **PS 314788 C**



KLM DEVELOPMENT CONSULTANTS 1/50 THOMAS ST. DANDENONG. 3175 PH (03) 794 9438	SCALE 20 0 20 40 60 80 100 LENGTHS ARE IN METRES	ORIGINAL SCALE: 1:2000 / SHEET SIZE: A3	LICENSED SURVEYOR (PRINT) STEPHEN J McCARTHY SIGNATURE ..... DATE 14 / 1 /92 REF 19092 VERSION 3	SHEET 2 OF 2 SHEETS DATE 21 / 5 /92. COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

Creffields PS04

MODIFICATION TABLE
RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER
PS 314788C

LAND	MODIFICATION	DEALING REFERENCE	DATE AND TIME REGISTERED & RECORDED		NEW EDITION NUMBER	SIGNATURE OF ASSISTANT REGISTRAR OF TITLES
			DATE	TIME		
LOT 2	SUBDIVISION	PS 338577			2	

PS314788C. Page 3 of 3. Printed 15:14 04/05/2010. Search Enquiry 0422820. Customer 13500

Number: **10422823**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10220/398**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584954T Volume 10220 Folio 398

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10220 FOLIO 398

Security no : 124033584951W
Produced 04/05/2010 03:15 pm

LAND DESCRIPTION
Lot 1 on Plan of Subdivision 338577G.
PARENT TITLE Volume 10162 Folio 788
Created by instrument PS338577G 10/03/1995

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
PETKO LAZAROVSKI
MILA LAZAROVSKI both of 90-92 JOHN FAWKNER DR. ENDEAVOUR HILLS 3802
U267740E 18/06/1996

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE V824244G 05/01/1999
COMMONWEALTH BANK OF AUSTRALIA

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS338577G FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 352-356 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2583
Melb 3001
(DX 30)
Ph. 9629 9011

PLAN OF SUBDIVISION

STAGE NO.	LTO use only	Plan Number
1	EDITION 2	PS 338577G

Location of Land

Parish: BERWICK

Township: ———

Section: 4

Crown Allotment: 29 (PART)

Crown Portion: ———

LTO Base Record: CHART 37 (2131)

Title Reference: VOL. 10162 FOL. 788

Last Plan Reference: PS 314788C (LOT 2)

Postal Address: CENTRE ROAD
(at time of subdivision) BERWICK 3806

AMG Co-ordinates E 352 900
(of approx. centre of land in plan) N 5 787 500 Zone: 55

Council Certificate and Endorsement

Council Name: CITY OF BERWICK Ref: 1440. 342. SS-02

1. This plan is certified under section 6 of the Subdivision Act 1988.
2. ~~This plan is certified under section 11(7) of the Subdivision Act 1988.~~
~~Date of original certification under section 6 / /~~
3. ~~This is a statement of compliance issued under section 21 of the Subdivision Act 1988.~~

OPEN SPACE

(i) A requirement for public open space under section 18 of the Subdivision Act 1988 ~~has~~/has not been made.

(ii) ~~The requirement has been satisfied.~~

(iii) ~~The requirement is to be satisfied in Stage~~.....

Council delegate
~~Council seal~~
Date 7 / 12 / 94

APPLIES TO MASTER PLAN (STAGE 1 ONLY)

Re-certified under section 11(7) of the Subdivision Act 1988

Council Delegate
Council Seal

Date / /

Vesting of Roads and/or Reserves

Identifier	Council/Body/Person
ROAD R1	CITY OF CASEY

Notations

Staging This is/~~is not~~ a staged subdivision
Planning Permit No. P 332/ 94

Depth Limitation 15.24 METERS BELOW THE SURFACE

OTHER PURPOSE OF THE PLAN OF STAGE 2

THE REMOVAL AS TO PART ON THE REGISTRATION OF THIS PLAN OF THE EASEMENT FOR DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT VOL.6971 FOL.051 BEING THE EASEMENT SHOWN E-1 ON C/T VOL.10220 FOL.399

GROUNDS FOR REMOVAL OF EASEMENT.

PLANNING PERMIT NO. P410/00

OTHER PURPOSE OF THE PLAN.
The removal as to part upon the registration of this plan of the easement for drainage and other purposes set out in Crown Grant Vol. 6971 Fol. 051.
Designated E-1 and E-5 on C/T. Vol. 10162 Fol. 788.

GROUNDS FOR REMOVAL OF EASEMENT.
Direction of Planning Permit No. P 332/ 94

Survey This plan ~~is~~/is not based on survey

This survey has been connected to permanent marks no(s) ———
In Proclaimed Survey Area No. ———

Easement Information

Legend: E - Encumbering Easement or Condition in Crown Grant in the Nature of an Easement
A - Appurtenant Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefitted/In Favour Of
E-1	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT V.6971 F.051	4·02	CROWN GRANT VOL.6971 FOL.051	SEE CROWN GRANT VOL.6971 FOL.051
E-2	DRAINAGE	5 m	P.S. 314788C	MELBOURNE WATER CORPORATION
E-3	CARRIAGEWAY	8 m	THIS PLAN	
E-4	DRAINAGE	SEE PLAN	P.S. 314788C	MELBOURNE WATER CORPORATION
	CARRIAGEWAY		THIS PLAN	
E-6	DRAINAGE & SEWERAGE	SEE DIAG	THIS PLAN	LAND IN THIS PLAN
	SEWERAGE	SEE DIAG	THIS PLAN	SOUTH EAST WATER LIMITED

LTO use only

Statement of Compliance/ Exemption Statement
Received ☑
Date 3 / 2 / 95

THIS IS AN L.T.O. COMPILED PLAN
CHECKED 4/3/02
G S Newman
Assistant Registrar of Titles

Sheet 1 of 4 Sheets

Millar & Merrigan Pty. Ltd.
TOWN PLANNERS LAND SURVEYORS & CONSULTING ENGINEERS
A.C.N. 005 541 866
21 COOLSTORE ROAD, CROYDON, 3136. P.O. BOX 247
(FAX. 725 2710) PH. 725 8866

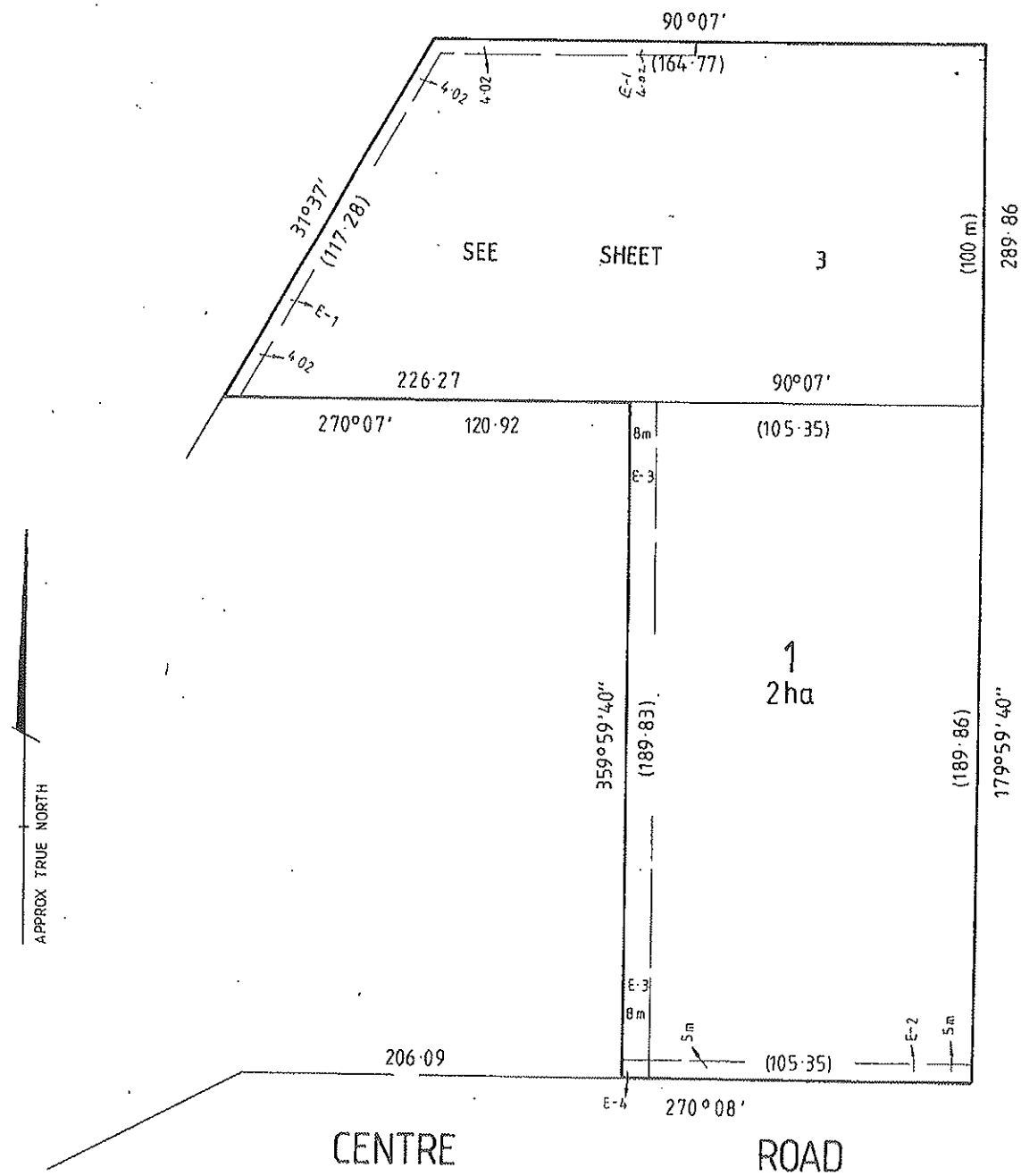
LICENSED SURVEYOR (PRINT) G. J. EDWARDS
SIGNATURE..... DATE / /
REF 9553-1 VERSION 1 : 8/8/94

DATE / /
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

T.O.1

PLAN OF SUBDIVISION	Stage No. 1	Plan Number PS 338577G



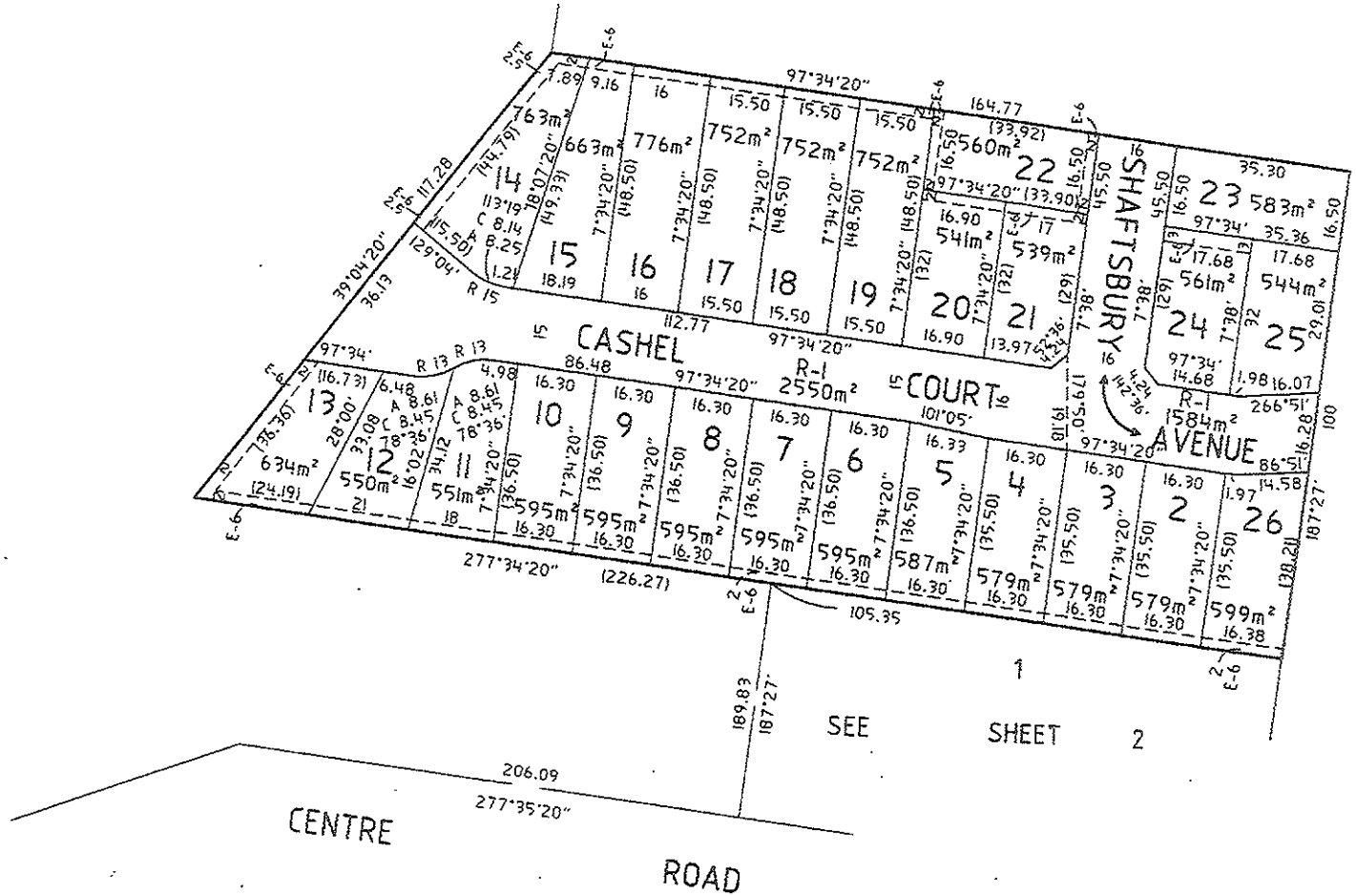
Millar & Merrigan Pty. Ltd.
TOWN PLANNERS LAND SURVEYORS & CONSULTING ENGINEERS
A.C.N. 005 541 868
21 COOLSTORE ROAD, CROYDON, 3136, P.O. BOX 247
(FAX. 725 2710) PH. 725 8666

ORIGINAL SCALE	SHEET SIZE	SCALE	LICENSED SURVEYOR (PRINT) G.J. EDWARDS	Sheet 2 of 4 sheets
1:1250	A3	12·5 0 25 50 LENGTHS ARE IN METRES	SIGNATURE ..... DATE / /	DATE / /
			REF 9553-1 VERSION 1	COUNCIL DELEGATE SIGNATURE
				Original sheet size A3

T.O.2

PLAN OF SUBDIVISION

STAGE No.	PLAN NUMBER
	PS 338577G



KLM DEVELOPMENT CONSULTANTS LEVEL 3, 47 PRINCES HWY DANDENONG, 3175 PH. (03) 9794-9438	SCALE 10 0 10 20 30 40 50 LENGTHS ARE IN METRES	ORIGINAL SCALE: 1:1000 SHEET SIZE: A3	LICENSED SURVEYOR (PRINT) ..... JAMES A. DEA ..... SIGNATURE ..... DATE 25/9/01 REF 2381 VERSION 7	SHEET 3 OF 4 SHEETS ..... DATE 15/10/2001 COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

PS338577G, Page 3 of 5, Printed 15:15 04/05/2010, Search Enquiry 0422823, Customer 13500

PS338577G, Page 4 of 5, Printed 15:15 04/05/2010, Search Enquiry 0422823, Customer 13500

PLAN OF SUBDIVISION

STAGE No.	PLAN NUMBER
	PS 338577 G

SUBDIVISION ACT 1988
CREATION OF RESCRICTION

The following restriction shall be created upon registration of the plan of subdivision as directed in planning permit No. P418/00 issued by the city of of Casey on the 22nd November 2000.

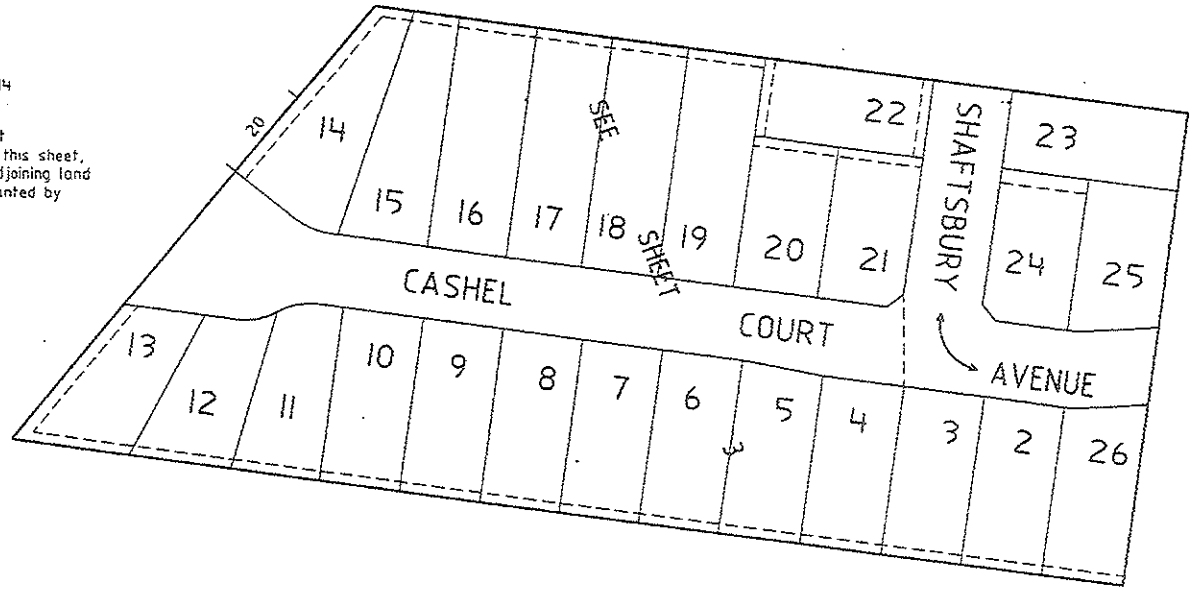
LAND TO BENEFIT
LOTS ON PS.338577 G

LAND TO BE BURDENED
LOT 14

DESCRIPTION OF THE RESTRICTION

The registered proprietor or proprietors for the time being of Lot 14 on this plan of subdivision shall not:

1. Construct any fence on the frontage of Lot 14 or along the first 20 metres of the westernmost boundary of Lot 14, as shown on this sheet, unless that fence allows a clear and unobstructed view of the adjoining land on that westernmost boundary without further approval being granted by the Responsible Authority.



KLM DEVELOPMENT CONSULTANTS
LEVEL 3, 47 PRINCES HWY
DANDENONG, 3175
PH. (03) 9794-9438

SCALE
10 0 10 20 30 40 50
LENGTHS ARE IN METRES

ORIGINAL
SCALE: 1:1000
SHEET SIZE: A3

LICENSED SURVEYOR (PRINT) ..... JAMES A. DEA .....
SIGNATURE .....
DATE 25 / 9 / 01
REF 2381
VERSION 7

SHEET 4 OF 4 SHEETS

.....
DATE 15 / 10 / 2001
COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

MASTER PLAN (STAGE 1) REGISTERED DATE 10/3/95 TIME 9.30AM

PLAN NUMBER

PS 338577G

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
LOT S2	LOTS 2-26(BI) & ROAD R1	STAGE 2	PS338577G/S2	26/2/02	2.24PM	2	

PS338577G, Page 5 of 5, Printed 15:15 04/05/2010, Search Enquiry 0422823, Customer 13500

Number: **10422828**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10595/500**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584961L Volume 10595 Folio 500

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10595 FOLIO 500

Security no : 124033584958P
Produced 04/05/2010 03:15 pm

LAND DESCRIPTION
Lot A on Plan of Subdivision 437692E.
PARENT TITLE Volume 09374 Folio 116
Created by instrument PS437692E 31/07/2001

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
NENE PROPERTIES PTY LTD of 7 TUILERIES RISE NARRE WARREN SOUTH VIC 3805
AC177632G 04/07/2003

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS437692E FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 358-364 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEW[illegible]
Title Searchers
GPO BOX 2[illegible]
Melb 3001
(DX [illegible])
Ph. 9629 80[illegible]

REVERSE IMAGE INKJET

v4 - 1-3 ease
v3 - d&s ease
v2 - align shaft,d&s ease

	PLAN OF SUBDIVISION	Stage No /	LTO use only EDITION 1	Plan Number PS 437692E

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 29 (PART)
Crown Portion:

LTO base record: Chart 37 (BERWICK 2131),DCMB
Title References:
c\t Vol. 9374 - Fol. 116
Last Plan Reference: LP 124970 (Lot 2)
Postal Address: (At time of subdivision) 358-364 Centre Road Berwick, 3806
AMG Co-ordinates: (Of approx. centre of plan) E 353 050 N 5 787 600 Zone: 55

Vesting of Roads or Reserves

Identifier	Council/Body/Person
ROADS R-1	CITY OF CASEY

Council Certification and Endorsement

Council Name: City of Casey Ref: S00/2222

~~1. This Plan is certified under Section 6 of the Subdivision Act 1988~~

2. This plan is certified under section 11(7) of the Subdivision Act 1988
Date of original certification under section 6 27 / 04 / 2001

~~3. This is a statement of compliance issued under section 21 of the Subdivision Act 1988~~

OPEN SPACE
(i) A requirement for public open space under Section 18 Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied. FOR LOTS 1 TO 20 ONLY

~~(iii) The requirement is to be satisfied in Stage~~

~~Council delegate~~
~~Council seal~~
~~Date / /~~

Re-certified under section 11(7) of the Subdivision Act 1988.

Council delegate
~~Council seal~~
Date 14 / 06 / 2001

Notations

Depth Limitation - 15.24 metres below the surface applies to all the land in the plan.

Staging: This is not a staged subdivision
Planning permit No.- P368/00

Survey: This plan is based on survey
(To be completed where applicable)
This survey has been connected to permanent marks no(s). PM 173, MPOWB 93/014
in Proclaimed Survey Area No 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/in Favour Of
E-1	The condition relating to drainage setout in C/G Vol 6971 Fol 051	4.02	Crown Grant Vol 6971 Fol 051	See Crown Grant Vol 6971 Fol 051
E-1	Drainage & Sewerage	4.02	This plan	Lots in this plan
E-1	Sewerage	4.02	This plan	South East Water Ltd
E-2	Drainage & Sewerage	See diag	This plan	Lots in this plan
E-2	Sewerage	See diag	This plan	South East Water Ltd
E-3	Drainage & Sewerage	See diag	This plan	Lots in this plan
E-3	Sewerage	See diag	This plan	South East Water Ltd
E-3	The condition relating to drainage setout in C/G Vol 6971 Fol 051	4.02	Crown Grant Vol 6971 Fol 051	See Crown Grant Vol 6971 Fol 051

LTO use only

Statement of compliance/ Exemption Statement

Received ☑

Date: 23 / 07 / 2001

LTO use only

PLAN REGISTERED

TIME 11.45

DATE: 31 / 7 / 2001

Jun. R. McLeod

Assistant Registrar of Titles.

Sheet 1 of 3 Sheets

BORTOLI WELLINGTON PTY.LTD.
ACN 069 841 498
CONSULTING LAND SURVEYORS
2 RAILWAY PARADE
HURRUMBEENA, Victoria, 3163
Phone (03) 9565 1692 FAX (03) 9565 1648

LICENSED SURVEYOR (PRINT) Robert G Bortoli

SIGNATURE ..... DATE 12 / 06 / 2001

REF: 1322A (Stage 1) VERSION 5

RB 1322A-1.DWG 16/11/2000

.....

DATE 14 / 06 / 2001
COUNCIL DELEGATE SIGNATURE

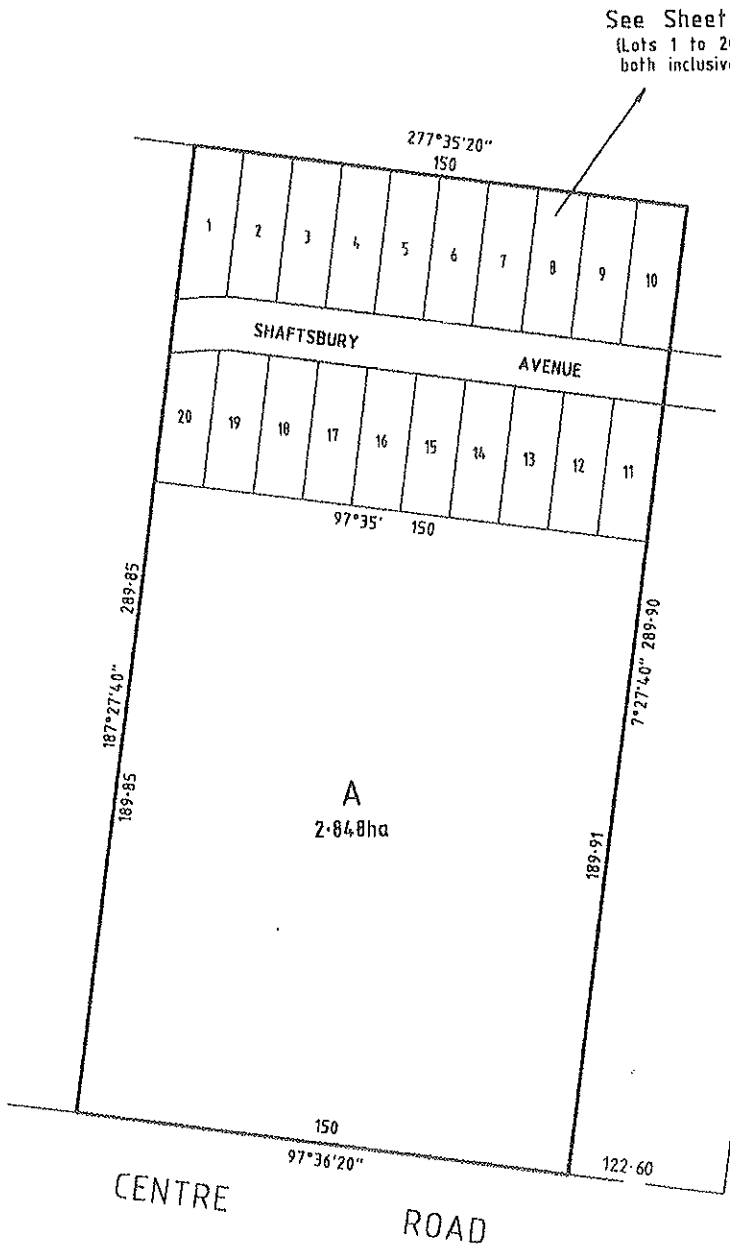
Original sheet size A3

REVERSE IMAGE INKJET

v3-amg.gat
v4 - a3.ease
v3 - d&s.ease
v2 - align shaft.d&s.ease

PLAN OF SUBDIVISION

Stage No	Plan Number
/	PS 437692E



BORTOLI WELLINGTON PTY.LTD.
ACN 069 861 498
CONSULTING LAND SURVEYORS
2 RAILWAY PARADE
MURRUMBEENA, Victoria, 3163
Phone (03) 9565 1692 FAX (03) 9565 1648

SCALE
15 0 15 30 45 60
LENGTHS ARE IN METRES

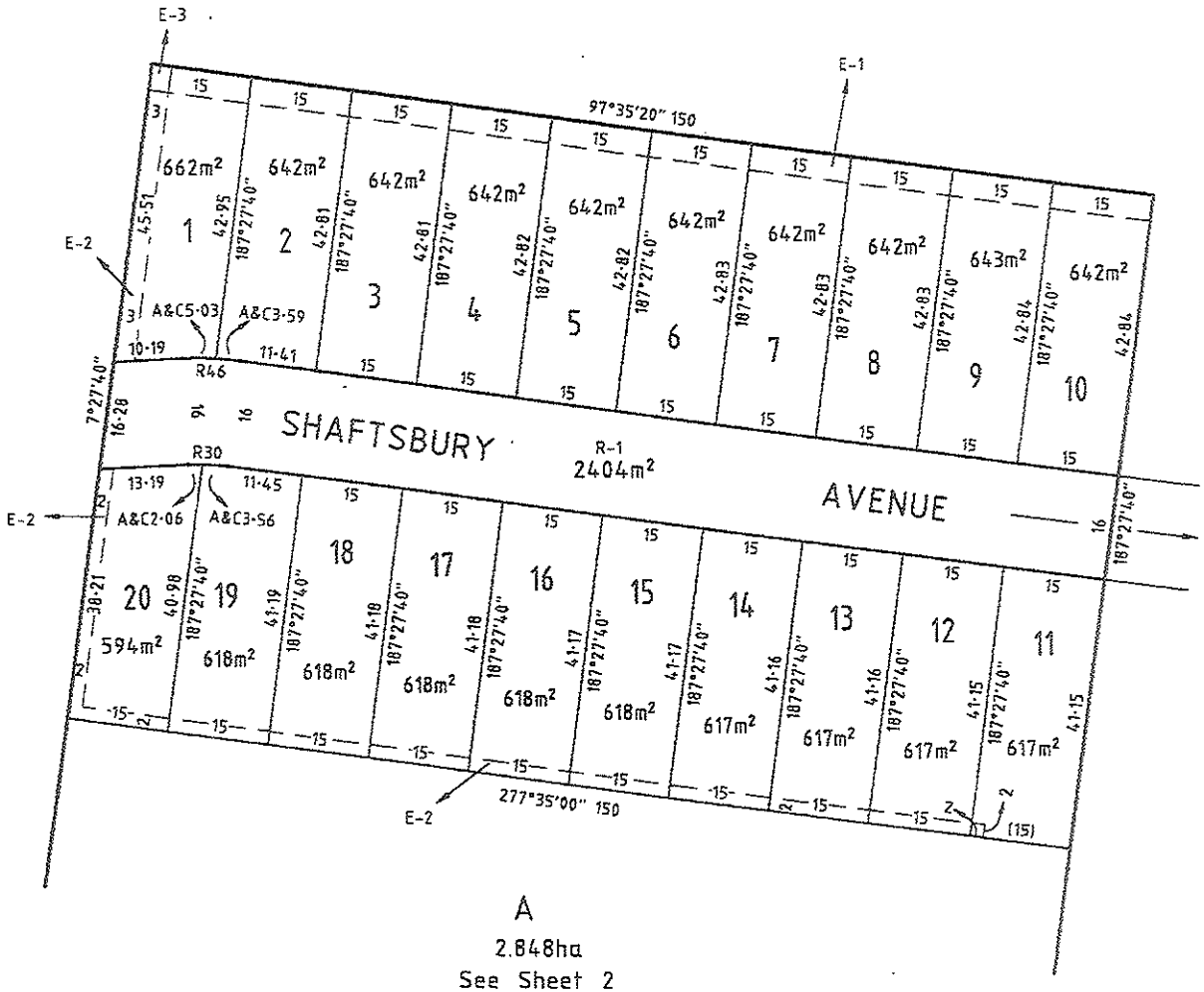
ORIGINAL
SCALE 1:1500
SHEET SIZE A3

LICENSED SURVEYOR (PRINT) Robert G Bortoli
SIGNATURE ..... DATE 12 /06 /2001
REF 1322 (Stage 1) VERSION 5
RB 1322A-2-DWG 13/06/2001

Sheet 2 of 3 Sheets
.....
DATE 14 /06 / 2001
COUNCIL DELEGATE SIGNATURE

PS437692E, Page 3 of 3, Printed 15:15 04/05/2010, Search Enquiry 0422828, Customer 13500

PLAN OF SUBDIVISION	Stage No	Plan Number
	/	PS 437692E



A
2.848ha
See Sheet 2

BORTOLI WELLINGTON PTY.LTD.
ACN 069 641 498
CONSULTING LAND SURVEYORS
2 RAILWAY PARADE
MURRUMBEENA, Victoria, 3163
Phone (03) 9565 1692 FAX (03) 9565 1648

SCALE
7.5 0 7.5 15 22.5 30 37.5
LENGTHS ARE IN METRES

ORIGINAL
SCALE 1:750 | SHEET SIZE A3

LICENSED SURVEYOR (PRINT) Robert G. Bortoli
SIGNATURE ..... DATE 12 / 06 /2001
REF 1322 (Stage 1) VERSION 5
RB 1322A-3.DWG 13/06/2001

Sheet 3 of 3 Sheets
DATE 14 /06/2001
COUNCIL DELEGATE SIGNATURE

REVERSE IMAGE INKJET

Number: **10422830**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8874/930**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584969B Volume 8874 Folio 930

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08874 FOLIO 930 Security no : 124033584964H
Produced 04/05/2010 03:15 pm

LAND DESCRIPTION
Lot 1 on Title Plan 748354D (formerly known as part of Crown Allotment 28 Section 4 Parish of Berwick).
PARENT TITLE Volume 06971 Folio 051
Created by instrument E001263 30/03/1971

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
STATEVIEW ENTERPRISE PTY LTD of 505 ST KILDA RD MELBOURNE
N978386H 26/01/1989

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP748354D FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 335-347 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & McMILL
Title Searchers
GPO BOX 2766
Melb 3001
(DX 00)
Ph. 9629 601

TITLE PLAN		EDITION 1	TP 748354D

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 28(PT)
Crown Portion:

Last Plan Reference:
Derived From: VOL 8874 FOL 930
Depth Limitation: 15.24 m

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES:

AS TO THE LAND SHOWN MARKED E-1

THE CHANNEL CONDITION set out in Crown Grant Vol.6971 Fol.051 - ~~

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 02/10/2002
VERIFIED: BC

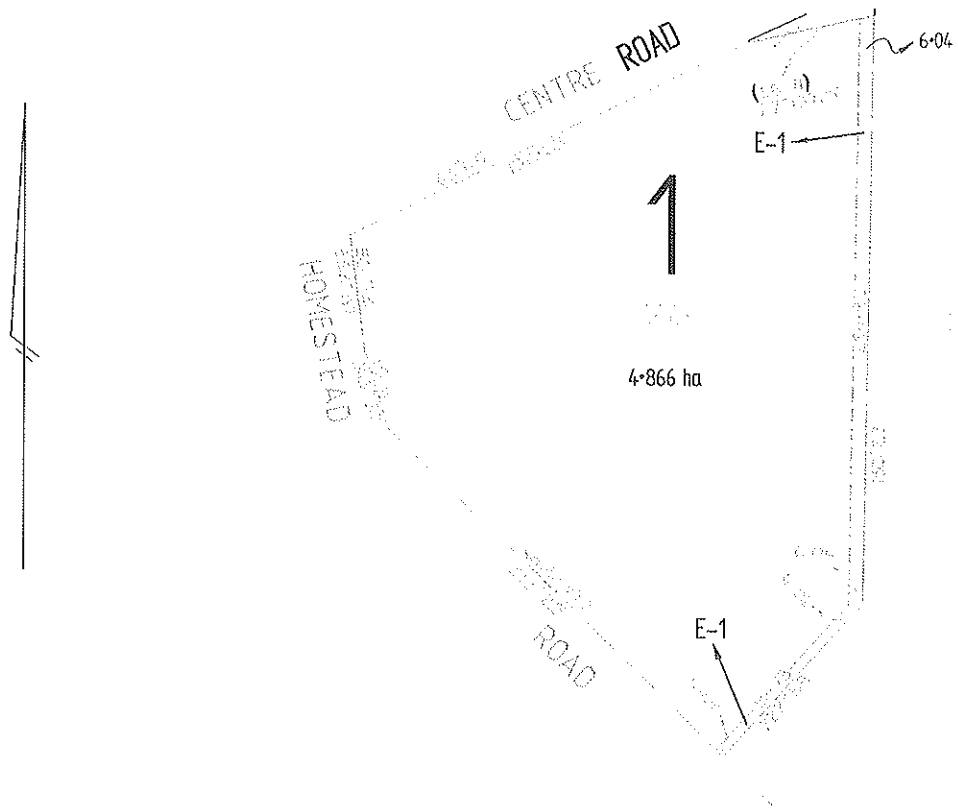

TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = CA 28 (PT)

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Print Date: 4/5/2010

Time: 15:17

Number: **10422849**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8945/786**

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FINAL SEARCH STATEMENT

Land Victoria

Security No : 124033585039C

Volume 8945 Folio 786

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH069591D	CAVEAT	Registered	01/03/2010

STATEMENT END

NOTE

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Incl GST:**$0.00** Fee: **$8.95**

Department of Sustainability and Environment

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08945 FOLIO 786

Security no : 124033585035F
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 16 on Plan of Subdivision 052810.
PARENT TITLE Volume 08484 Folio 303
Created by instrument E504927 23/08/1972

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
NUPRO DEVELOPMENTS PTY LTD of 19 CLARE ST BAYSWATER 3153
X737036C 12/09/2001

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AG078138H 11/09/2008
PROMPT SHEETMETAL PTY LTD

CAVEAT AG143524R 16/10/2008
Caveator
CARMELA MARIA MALASO
Capacity SEE CAVEAT
Lodged by
NATOLI A B
Notices to
A B NATOLI PTY of 24 COTHAM ROAD KEW VIC 3101

CAVEAT AH069591D 01/03/2010
Caveator
CARMELA MALVASO
Capacity SEE CAVEAT
Lodged by
NATOLI A B
Notices to
CARMELA MALVASO of 1 TANBRIDGE WAY WARRANWOOD VIC 3134

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP624253C FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH069591D	CAVEAT	Registered	01/03/2010

FEIGL & NEWELL
Title Searchers
GPO BOX [illegible]
Melb 3001
Ph. 9629 [illegible]

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 136-138 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

TITLE PLAN		EDITION 1	TP 624253C

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 22 (PT)
Crown Portion:

Last Plan Reference: LP 52810
Derived From: VOL 8945 FOL 786
Depth Limitation: 50 FEET

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

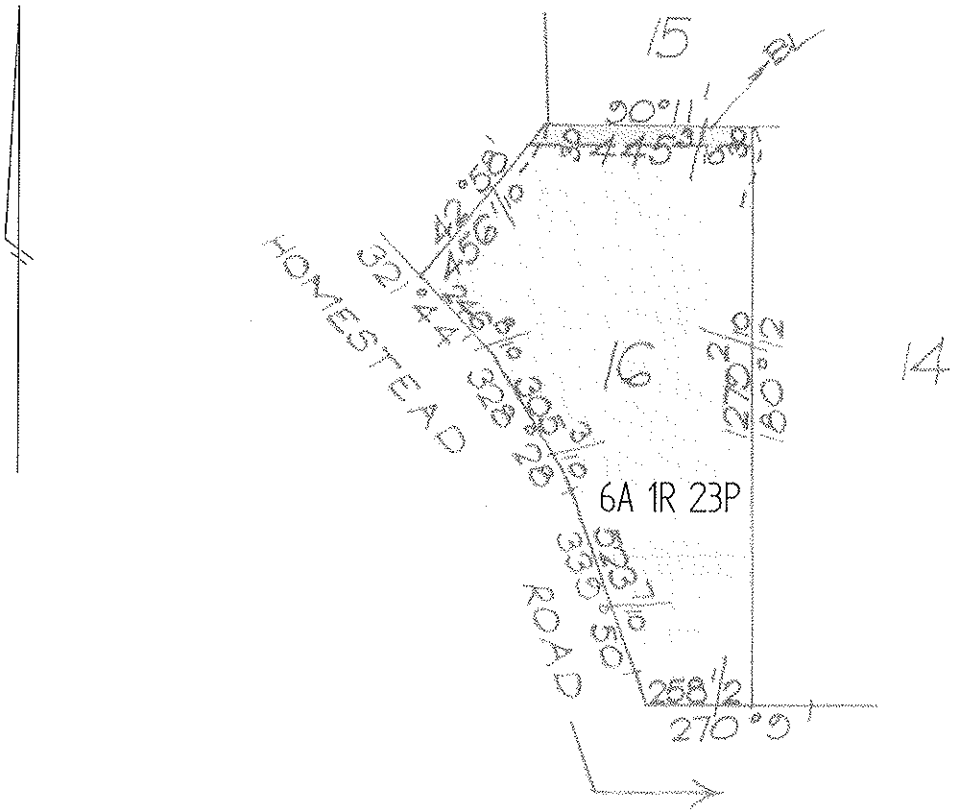
ENCUMBRANCES REFERRED TO
As to the land coloured blue - - -

THE EASEMENTS (if any) existing - - -
over the same by virtue of - - - -
Section 98 of the Transfer of - - -
Land Act - - - - - - - - - - - - -

ANY EASEMENTS affecting the same -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 12/09/2000
VERIFIED: AK

COLOUR CODE
BL = BLUE



LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

CAVEAT

Section 89 Transfer of Land Act 1958

Privacy I
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indexes i

AG143524R
16/10/2008 $65.90 89

under
se of
d

Lodged by:
Name: A B Natoli Pty
Phone: 9853-3222
Address: 24 Cotham Rd, Kew
Ref.: 1370C
Customer Code: AON

OFFICE OF TITLES C.D. VICTORIA

The caveator claims the estate or interest specified in the land described on the grounds set out and forbids the registration of any person as proprietor of and of any instrument affecting the estate or interest to the extent specified.

Land: *(title, mortgage, charge or lease)*

Volume 8945 Folio 786
Volume 9004 Folio 508

Caveator: *(full name and address)*

CARMELA MARIA MALASO of 1 Tanbridge Way, Warranwood Victoria 3134

Estate or Interest claimed:

An equitable estate in fee simple

Grounds of claim:
By virtue of a resulting
~~Resultant and~~/or implied Trust

Extent of prohibition: *(if not ABSOLUTELY delete and insert desired text)*
ABSOLUTELY

Address in Victoria for service of notice: *(include postcode)*

A.B. Natoli Pty of 24 Cotham Rd Kew 3101

Dated: 15 October 2008

Signature of Caveator .....

or

Signature of agent being an Australian Legal Practitioner within the meaning of/under the *Legal Profession Act 2004* .....

ANGELO JAMES NATOLI
24 Cotham Road, Kew 3101
An Australian Legal Practitioner
under the Legal Profession Act 2004

or

Signature of agent .....

Approval No. 18170711L

STAMP DUTY USE ONLY

C

OFFICE OF TITLES VICTORIA

THE BACK OF THIS FORM MUST NOT BE USED

corpelnt.com.au Item 2.21

Land Registry, 570 Bourke Street, Melbourne 3000. Phone 03 8636 2010

CAVEAT

Section 89 Transfer of Land Act 1958

Privacy Collecti... Statement
The information
statutory authorit
maintaining publ
indexes in the Vi

AH069591D
01/03/2010 $67.90 89

Lodged by:
Name: .....
Phone: A B Natoli Pty
Address: 9853 3222
Ref.: 24 Cotham Road Kew
Customer Code: AJN:FK:48983
1310C

OFFICE OF TITLES P.Siv. VICTORIA

The caveator claims the estate or interest specified in the land described on the grounds set out and forbids the registration of any person as proprietor of and of any instrument affecting the estate or interest to the extent specified.

Land: *(title, mortgage, charge or lease)*

Volume 9004 Folio 508 Volume 8945 Folio 786

Caveator: *(full name and address)*

CARMELA MALVASO of 1 Tanbridge Way, Warranwood Victoria 3134

Estate or Interest claimed:

Estate in fee simple

Grounds of claim:

Pursuant to Orders made at the Family Court of Australia at Melbourne on the 17/2/2010 between Carmela Malvaso and Bruno Malvaso and Nupro Developments Pty. Ltd.

Extent of prohibition: *(if not ABSOLUTELY delete and insert desired text)*
ABSOLUTELY

Address in Victoria for service of notice: *(include postcode)*

1 Tanbridge Way, Warranwood, Victoria 3134

Dated: 26/2/10

Signature of Caveator .....

or

Signature of agent being an Australian Legal Practitioner within the meaning of/under the *Legal Profession Act 2004* .....

or

Signature of agent ..... ANGELO JAMES NATOLI
24 Cotham Road Kew 3101

Approval No. 18170711L

An Australian STAMP DUTY USE ONLY under the Legal Profession Act 2004.

C

OFFICE OF TITLES VICTORIA

THE BACK OF THIS FORM MUST NOT BE USED

corprint.com.au item 2.21

Land Registry, 570 Bourke Street, Melbourne 3000. Phone 03 8636 2010

Number: **10422866**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 9455/598**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585081F Volume 9455 Folio 598

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09455 FOLIO 598

Security no : 124033585077K
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Crown Allotment 21 Section 4 Parish of Berwick.
PARENT TITLE Volume 06489 Folio 783
Created by instrument J726757 24/11/1981

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
JOAN FLORENCE ROSE QUIGLEY of HOMESTEAD RD BERWICK
P505981E 02/11/1989

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AB526421M 31/08/2002
WESTPAC BANKING CORPORATION

For details of any other encumbrances see the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP779209N FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 137 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & MCNEILL
Title Searchers
GPO BOX 5048
Melb 3001
(DX 264)
Ph. 9629 [illegible]

TITLE PLAN		EDITION 1	TP 779209N

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 21
Crown Portion:

Last Plan Reference:
Derived From: VOL 9455 FOL 598
Depth Limitation: 15.24 m

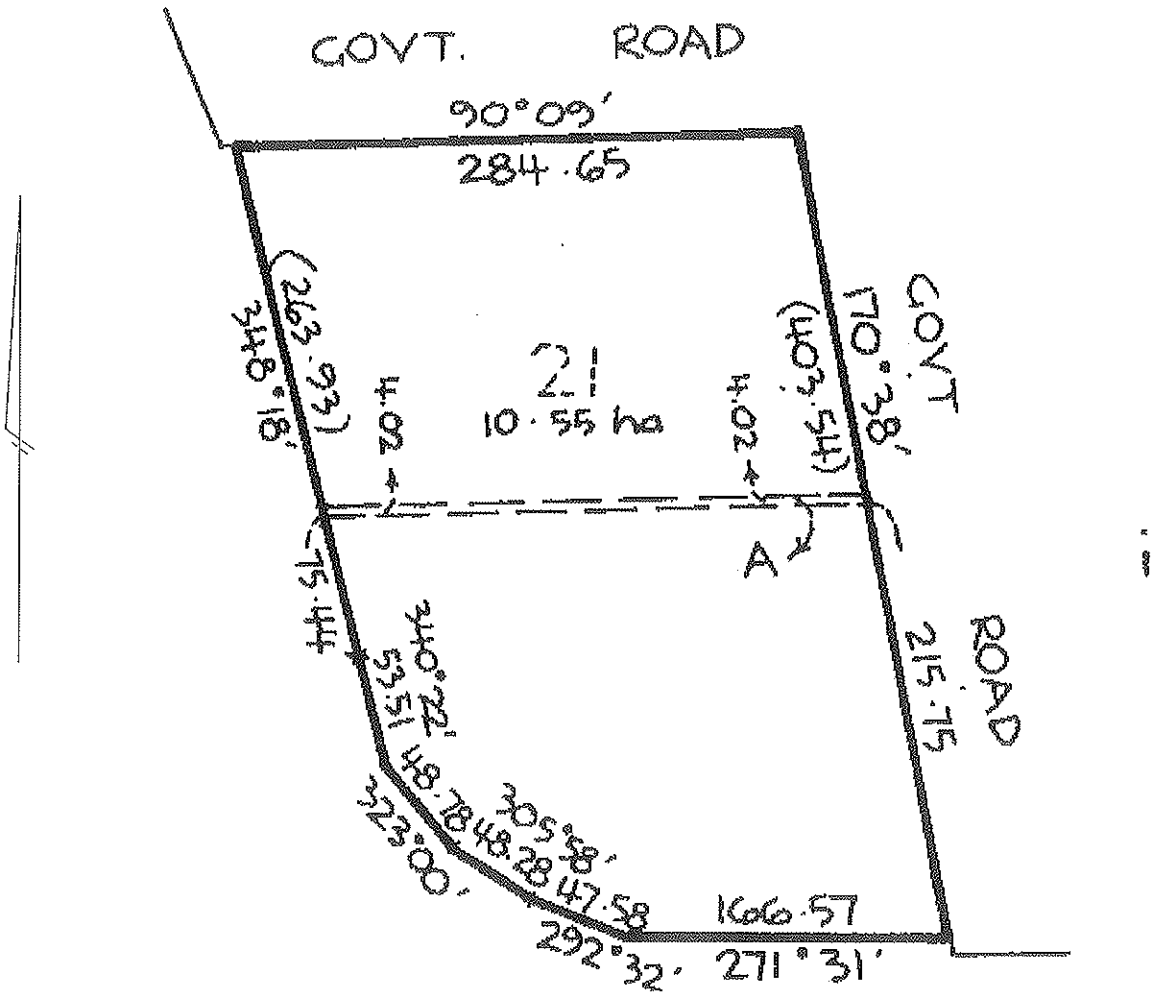
Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES REFERRED TO
As to the land shown marked A - - - - - - -
THE CONDITION relating to Drainage - - - - -
set out in Crown Grant Vol.6489 Fol.783 - -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 21/04/2003
VERIFIED: L.S.



LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Number: **10422834**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10104/059**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584972Y Volume 10104 Folio 059

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10104 FOLIO 059 Security no : 124033584971A
Produced 04/05/2010 03:15 pm

LAND DESCRIPTION
Lot 1 on Title Plan 213106J (formerly known as part of Lot 15 on Plan of Subdivision 052810).
PARENT TITLE Volume 08523 Folio 823
Created by instrument S257600E 08/12/1992

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
HENDRINA PETRONELLA KORTE of CENTRE ROAD BERWICK
S257600E 08/12/1992

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP213106J FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 349-351 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO Box [illegible]
Melb 3001
(DX 30)
Ph. 9629 301[illegible]

TITLE PLAN		EDITION 1	TP 213106J

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 22 (PT)
Crown Portion:

Last Plan Reference: LP52810
Derived From: VOL 10104 FOL 059
Depth Limitation: 15.24 m

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 10/11/1999
VERIFIED: CL

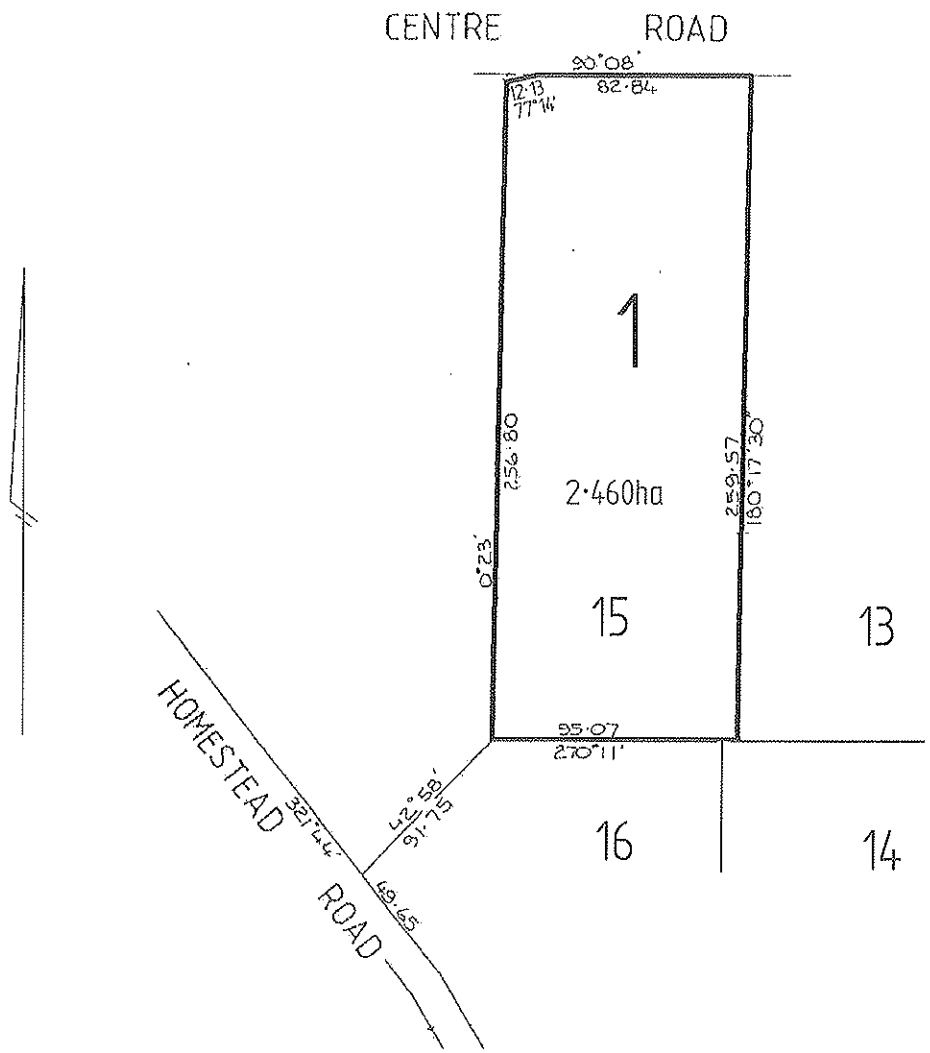

TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = LOT 15 (PT) ON LP52810

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Department of Sustainability and Environment

Print Date: 4/5/2010
Time: 15:16

Product Report

Number: **10422839**

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 11117/658**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria Volume 11117 Folio 658

Security No : 124033584990E

Produced 04/05/2010 03:15 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

Security no : 124033584989F
Produced 04/05/2010 03:15 pm

VOLUME 11117 FOLIO 658

LAND DESCRIPTION
Lot 13 on Plan of Subdivision 052810.
PARENT TITLE Volume 08341 Folio 267
Created by instrument AG342403U 11/02/2009

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
CATERINA VELARDO of 41-42 CAROLYN CLOSE NARRE WARREN NORTH VIC 3804
ANGELA ORLANDO of 10 CASDAN COURT NARRE WARREN NORTH VIC 3804
MARIANO CLEMENTE of 113 WEATHERALL ROAD CHELTENHAM VIC 3192
AG601256P 30/06/2009

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DECLARATION Section 56 Housing Act 1958
J869301 26/03/1982

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 353-355 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO Box 2648
Melb 3001
(DX 301)
Ph. 9629 2011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810

EDITION 4

APPROVED 2/12/60

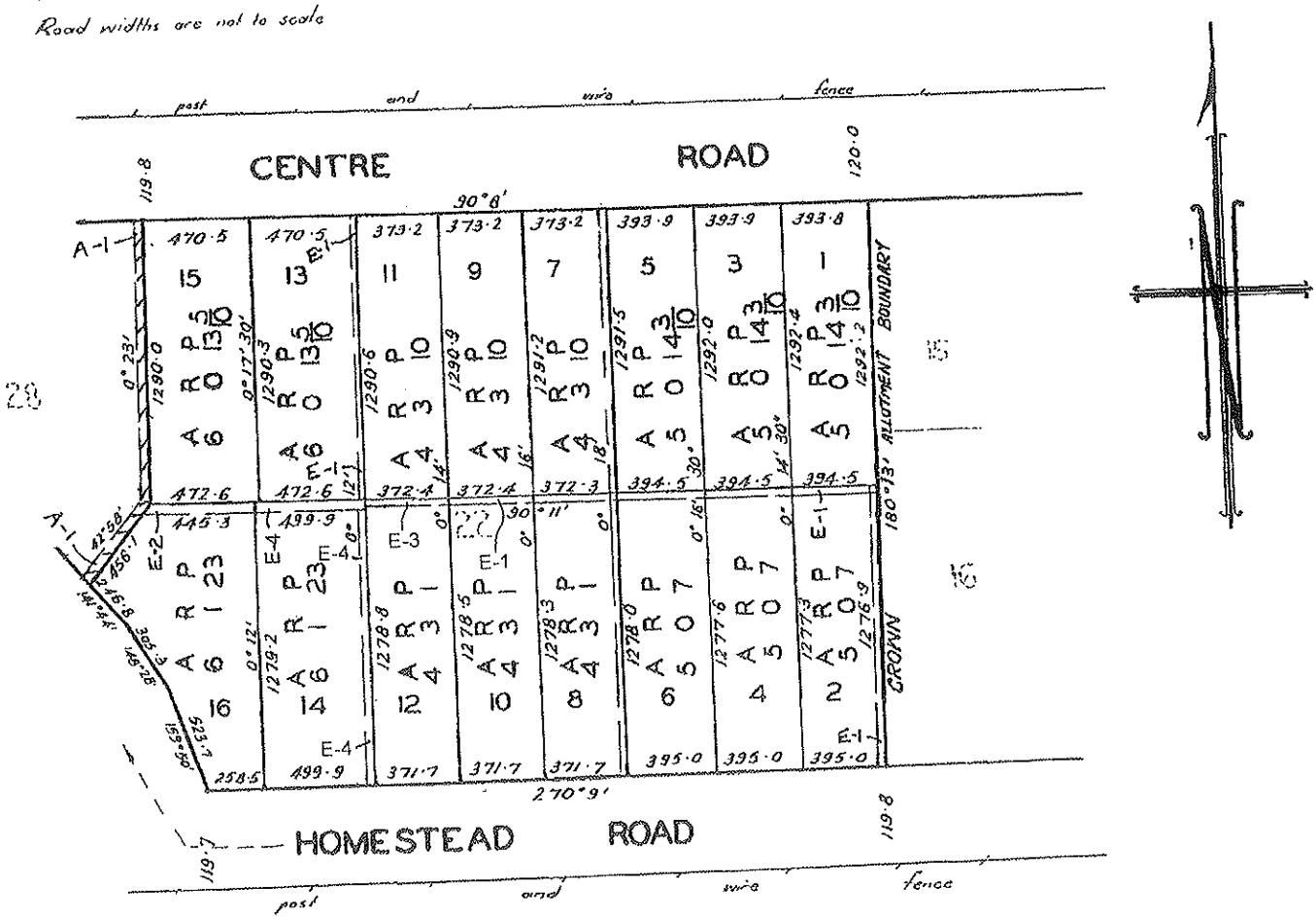
COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS
THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE
THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES
The land coloured green-hatched is an appurtenant easement See condition in S/D V.6371 F.051

NOTATIONS
Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER
LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E-3	EASEMENT NOTATION	F284020			2	[illegible]
LOT 1	**NIL**	**REMOVAL OF EASEMENT**	**PS501147B**	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810, Page 2 of 2, Printed 15:16 04/05/2010, Search Enquiry 0422839, Customer 13500

Number: **10422841**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10939/946**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585018Y Volume 10939 Folio 946

Produced 04/05/2010 03:16 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10939 FOLIO 946

Security no : 124033585016C
Produced 04/05/2010 03:16 pm

LAND DESCRIPTION
Lot 11 on Plan of Subdivision 052810.
PARENT TITLE Volume 08451 Folio 435
Created by instrument AE326436M 02/05/2006

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
ROSEHILL CORPORATION PTY LTD of SUITE 12 51-55 CITY ROAD SOUTHBANK VIC 3006

AD882233F 16/09/2005

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 357-359 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2540
Melb 3001
(DX 30+)
Ph. 9629 3011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810
EDITION 4
APPROVED 2/12/60

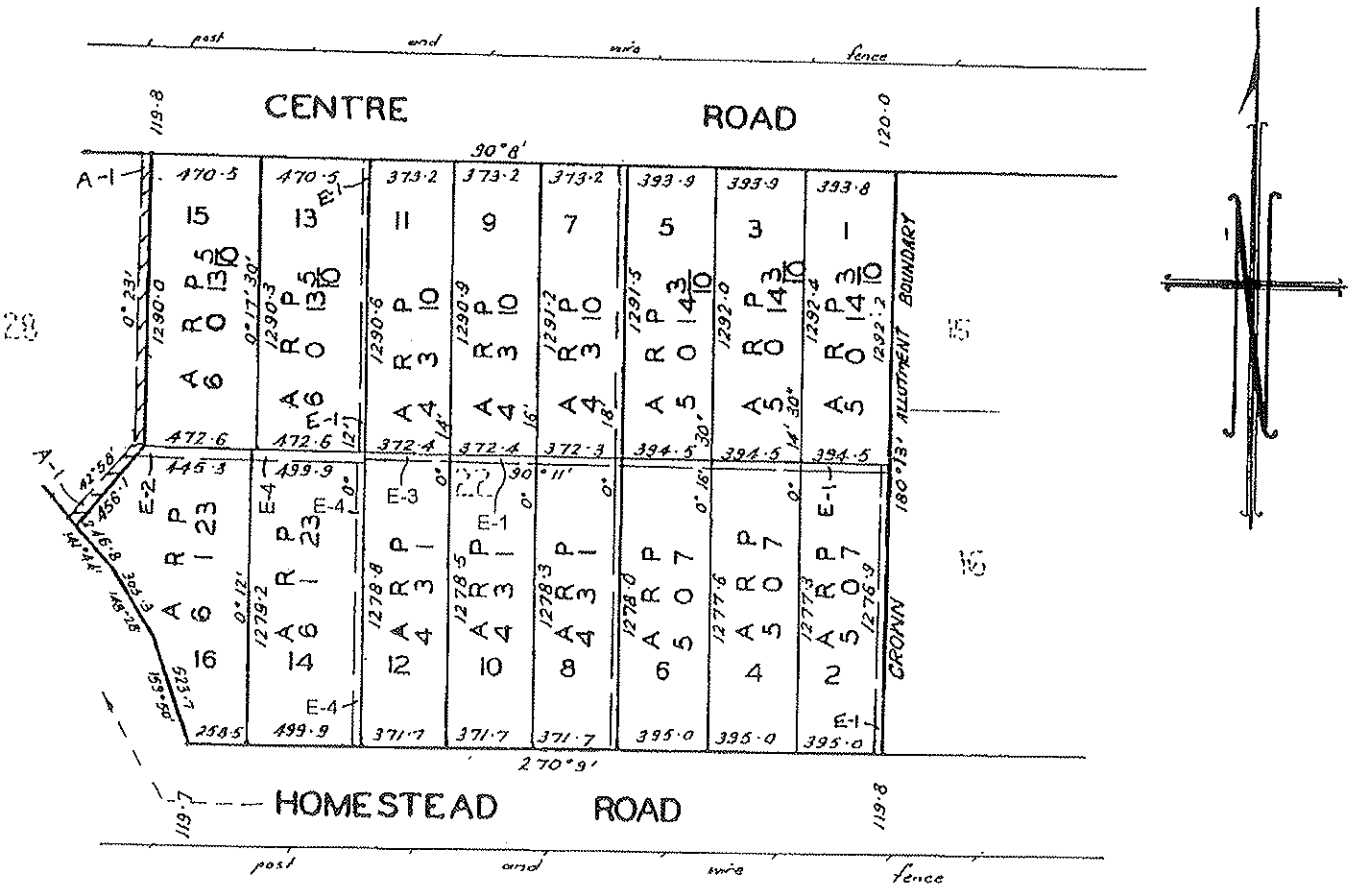
COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS
THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE
THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES
The land coloured green-hatched is an appurtenant easement
See condition in S/G K693 71 F.051

NOTATIONS
Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422842**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8481/689**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585021V Volume 8481 Folio 689

Produced 04/05/2010 03:16 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08481 FOLIO 689

Security no : 124033585020W
Produced 04/05/2010 03:16 pm

LAND DESCRIPTION
Lot 9 on Plan of Subdivision 052810.
PARENT TITLE Volume 08290 Folio 381
Created by instrument B803044 22/11/1963

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
MODESTO FAZIO
ANNA MARIA FAZIO both of 27 WAVE AVE MOUNT WAVERLEY
M343527M 30/06/1986

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 361-363 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2046
Melb 3001
(DX 391)
Ph. 9629 3011

PLAN OF SUBDIVISION OF
CROWN ALLOTMENT 22 SECTION 4
PARISH OF BERWICK
COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810
EDITION 4
APPROVED 2/12/60

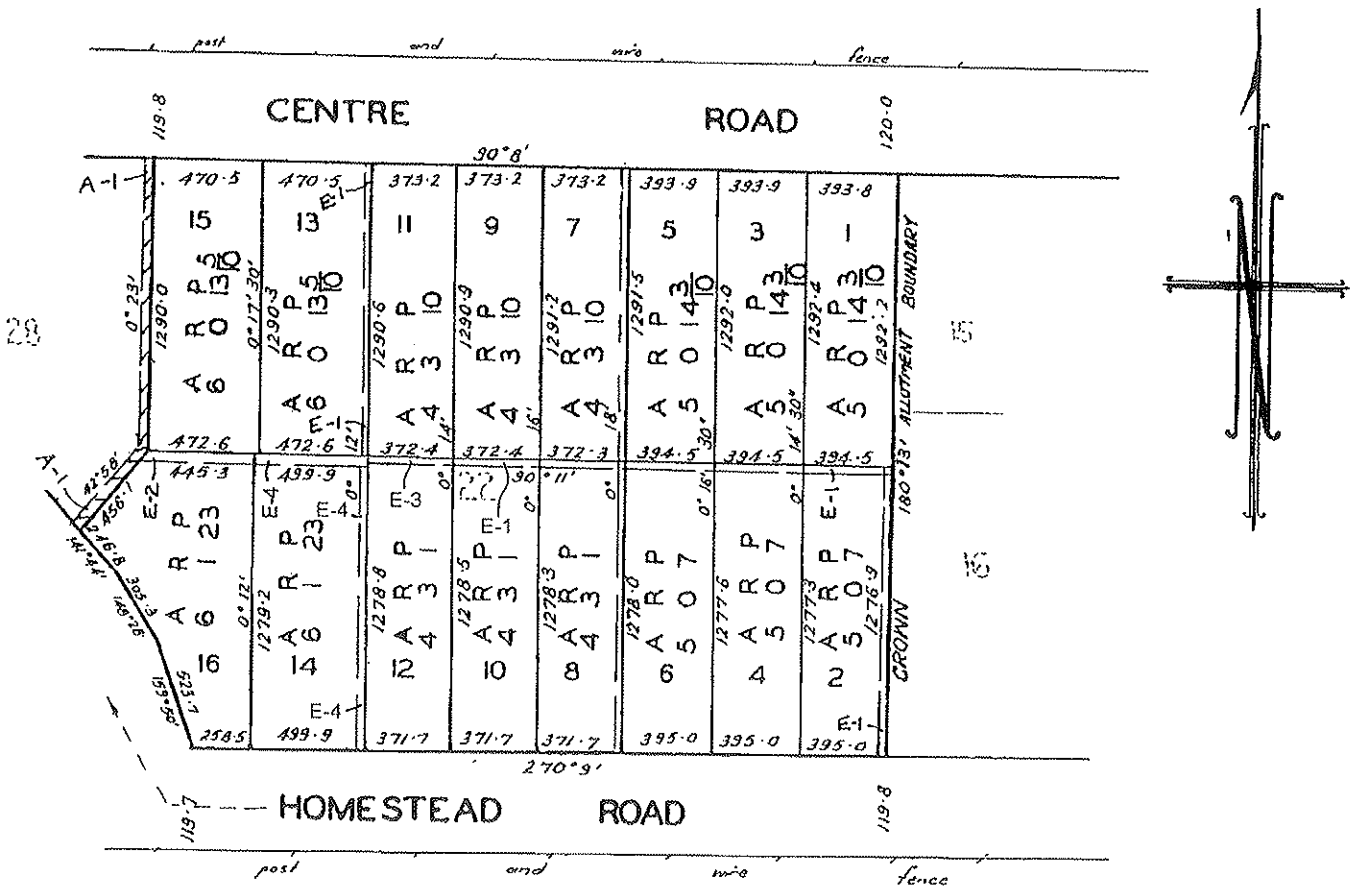
COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS
THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE
THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES
The land coloured green-hatched is an appurtenant easement
See condition in Sp V6971 F.051

NOTATIONS
Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F 284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Print Date: 4/5/2010

Time: 15:17

Number: **10422844**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL_NEWELL**	**Title 8481/690**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585025R Volume 8481 Folio 690

Produced 04/05/2010 03:16 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08481 FOLIO 690

Security no : 124033585023T
Produced 04/05/2010 03:16 pm

LAND DESCRIPTION
Lot 7 on Plan of Subdivision 052810.
PARENT TITLE Volume 08290 Folio 381
Created by instrument B803045 22/11/1963

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
DARNEL PTY LTD of "HWT TOWER" LEVEL 23 40 CITY ROAD SOUTHBANK VIC 3006
AD676359G 10/06/2005

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AD890379E 21/09/2005
SANDHURST TRUSTEES LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP624210W FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 365-367 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2843
Melb 3001
(DX 68)
Ph. 9629 3011

TITLE PLAN		EDITION 1	TP 624210W

Location of Land

Parish: BERWICK
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP52810
Derived From: VOL 8481 FOL 690
Depth Limitation: 50 FEET

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

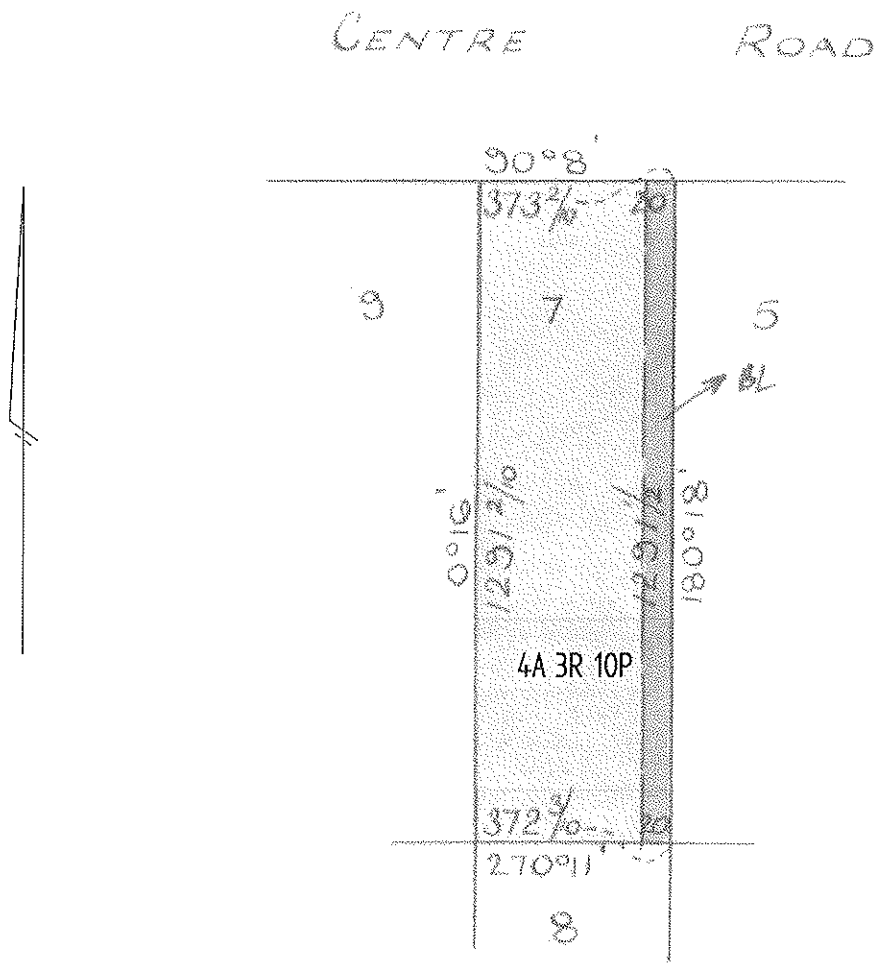
ENCUMBRANCES REFERRED TO

As to the land coloured blue -

ANY EASEMENTS affecting the -
same -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 11/04/2003
VERIFIED: RZ

COLOUR CODE
BL = BLUE



LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Number: **10422846**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8600/978**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585029M Volume 8600 Folio 978

Produced 04/05/2010 03:16 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08600 FOLIO 978

Security no : 124033585028N
Produced 04/05/2010 03:16 pm

LAND DESCRIPTION
Lot 5 on Plan of Subdivision 052810.
PARENT TITLE Volume 08338 Folio 176
Created by instrument C357028 11/11/1965

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
DARNEL PTY LTD of LEVEL 23/HWT TOWER 40 CITY RD, SOUTHGATE 3006
AC066088X 15/05/2003

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AC166109K 30/06/2003
SANDHURST TRUSTEES LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 369-371 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2046
Melb 3001
(DX 361)
Ph. 9629 3011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810

EDITION 4

APPROVED 2/12/60

COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS

THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE

THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES

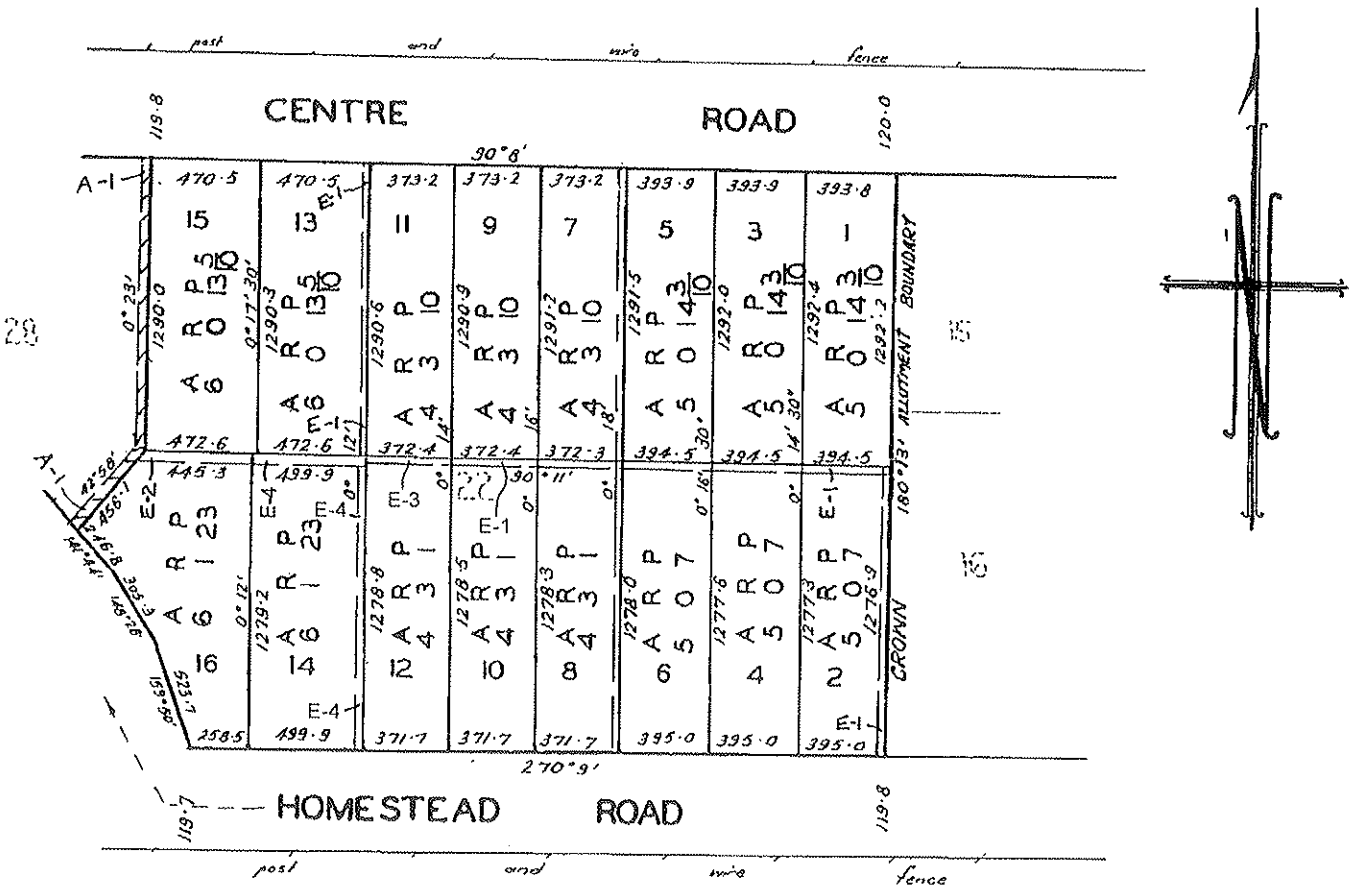
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES

The land coloured green-hatched is an appurtenant easement
See condition in Sp K697/ F.051

NOTATIONS

Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F284020			2	
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422848**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8341/266**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585033H Volume 8341 Folio 266

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08341 FOLIO 266

Security no : 124033585030L
Produced 04/05/2010 03:16 pm

LAND DESCRIPTION
Lot 3 on Plan of Subdivision 052810.
PARENT TITLE Volume 08338 Folio 176
Created by instrument B167568 07/03/1961

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
DAVID ERNEST KIMBERLEY
JOAN BEATRICE KIMBERLEY both of 373 CENTRE RD BERWICK 3806
V434687K 21/05/1998

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE V434688G 21/05/1998
COMMONWEALTH BANK OF AUSTRALIA

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 373-375 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

PEIGL & NEWTELL
Title Searchers
GPO BOX 2346
Melb 3001
(DX 30-)
Ph. 9629 3211

PLAN OF SUBDIVISION OF
CROWN ALLOTMENT 22 SECTION 4
PARISH OF BERWICK
COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810
EDITION 4
APPROVED 2/12/60

COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS

THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE

THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES

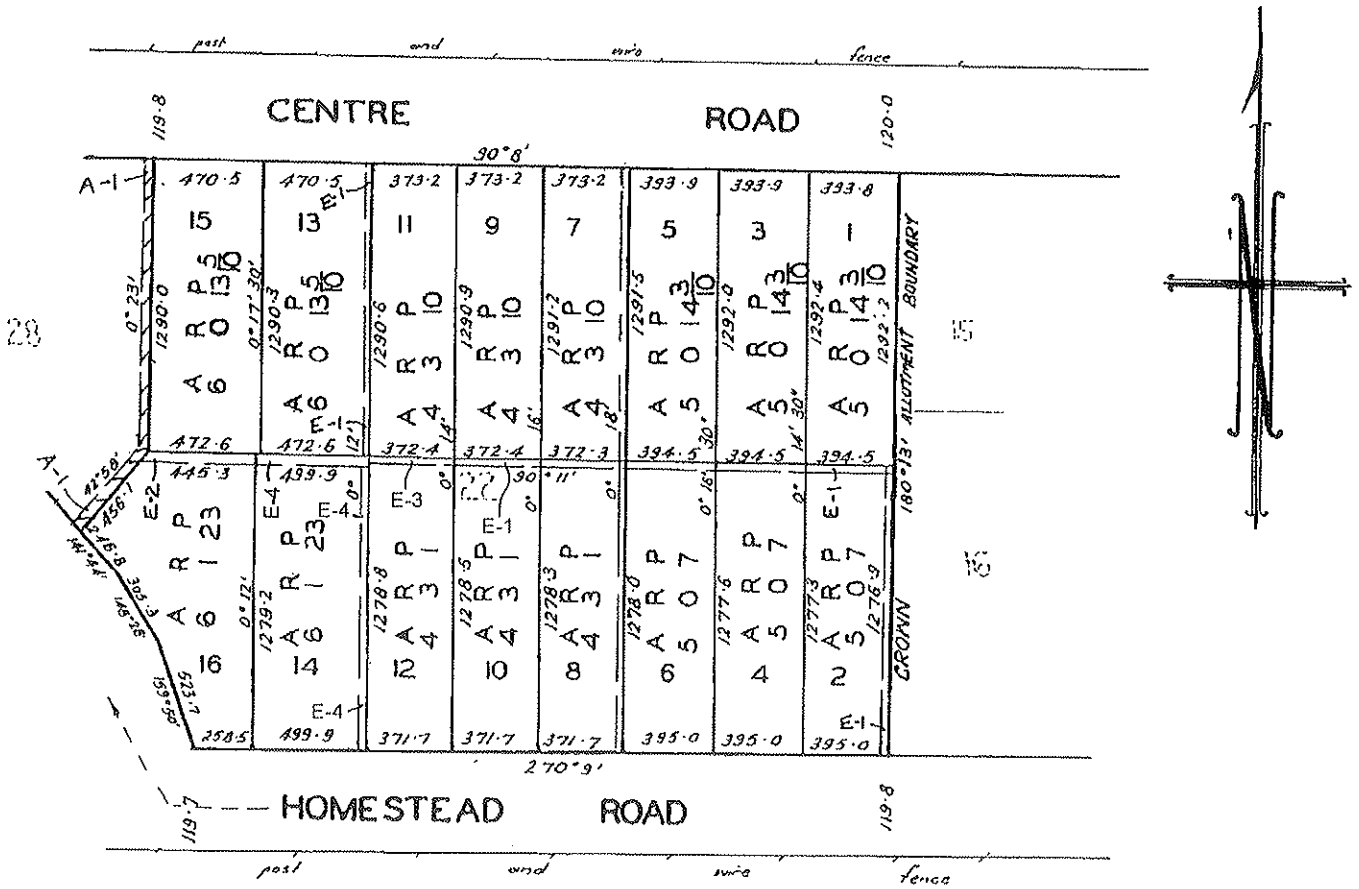
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES

The land coloured green-hatched is an appurtenant easement
See condition in Vol 6971 Fol 051

NOTATIONS

Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422851**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 9004/508**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585044V Volume 9004 Folio 508

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH069591D	CAVEAT	Registered	01/03/2010

STATEMENT END

NOTE

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Department of Sustainability and Environment

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09004 FOLIO 508 Security no : 124033585041Y
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 14 on Plan of Subdivision 052810.
PARENT TITLE Volume 08484 Folio 303
Created by instrument F038226 10/10/1973

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
NUPRO DEVELOPMENTS PTY LTD of 19 CLARE STREET BAYSWATER VIC 3153
AB721260W 27/11/2002

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AG078138H 11/09/2008
PROMPT SHEETMETAL PTY LTD

CAVEAT AG143524R 16/10/2008
Caveator
CARMELA MARIA MALASO
Capacity SEE CAVEAT
Lodged by
NATOLI A B
Notices to
A B NATOLI PTY of 24 COTHAM ROAD KEW VIC 3101

CAVEAT AH069591D 01/03/2010
Caveator
CARMELA MALVASO
Capacity SEE CAVEAT
Lodged by
NATOLI A B
Notices to
CARMELA MALVASO of 1 TANBRIDGE WAY WARRANWOOD VIC 3134

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH069591D	CAVEAT	Registered	01/03/2010

FEIGL & NEWELL
Title Searchers
GPO BOX 2343
Melb 3001
Ph. 9629 3011

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

DOCUMENT END

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810

EDITION 4

APPROVED 2/12/60

COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS

THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE

THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES

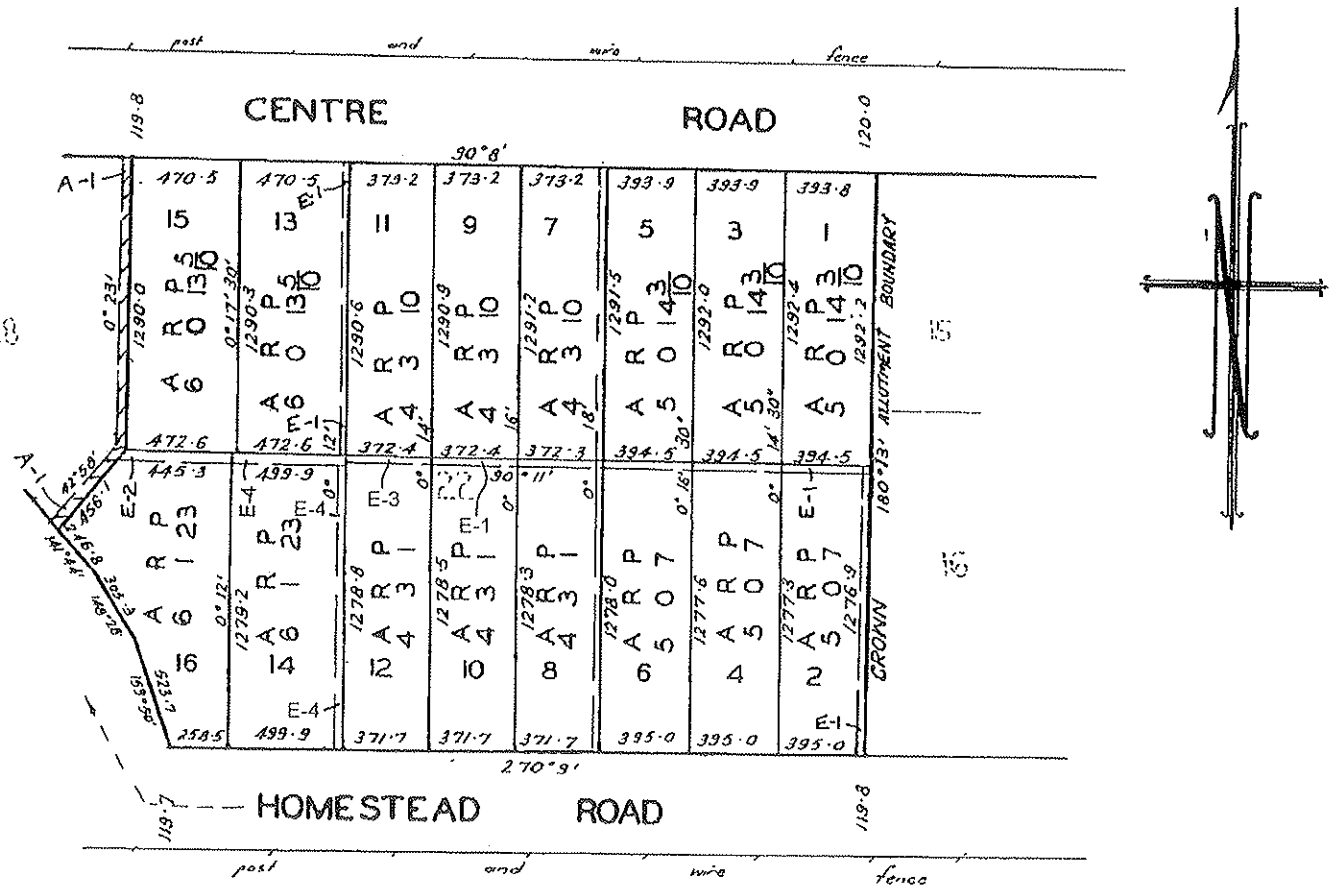
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES

The land coloured green-hatched is an appurtenant easement
See condition in Sp V6971 F.051

NOTATIONS

Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422852**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8481/688**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585049Q Volume 8481 Folio 688

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08481 FOLIO 688 Security no : 124033585046T
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 12 on Plan of Subdivision 052810.
PARENT TITLE Volume 08290 Folio 381
Created by instrument B749819 13/09/1963

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
KOK TONG TEE
HUI WEN TEE both of 2 ROCHELLE COURT DONCASTER EAST VIC 3109
AC658362E 10/02/2004

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 124-128 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2343
Melb 3001
DX 210
Ph. 9629 3011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810
EDITION 4
APPROVED 2/12/60

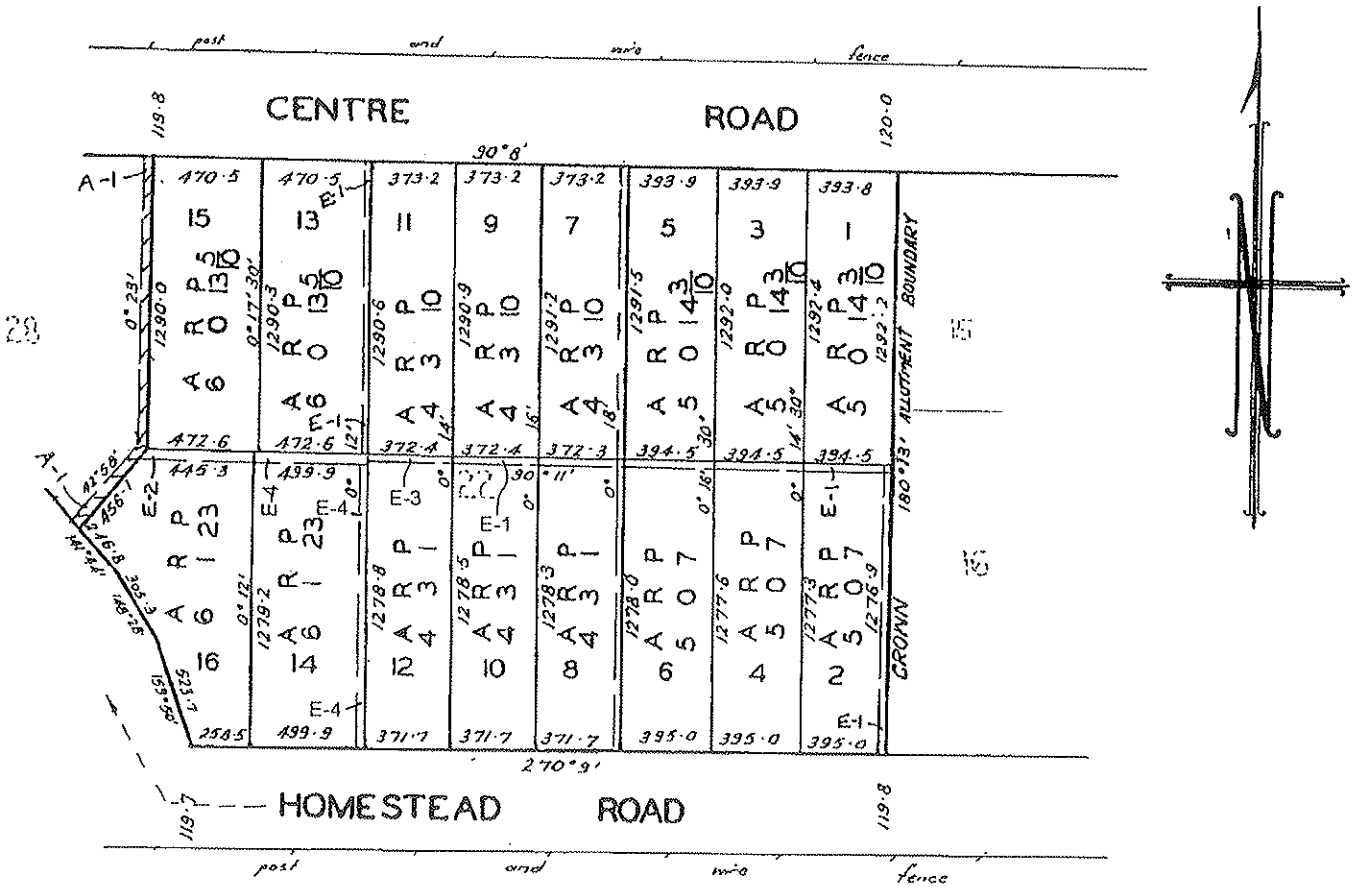
COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS
THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE
THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES
The land coloured green-hatched is an appurtenant easement
See condition in Sp V.6371 F.051

NOTATIONS
Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E - 3	EASEMENT NOTATION	F284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422854**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8481/687**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585052M Volume 8481 Folio 687

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08481 FOLIO 687

Security no : 124033585051N
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 10 on Plan of Subdivision 052810.
PARENT TITLE Volume 08290 Folio 381
Created by instrument B749816 13/09/1963

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
KOK TONG TEE of 2 ROCHELLE COURT DONCASTER EAST VIC 3109
AC702556X 27/02/2004

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP452231U FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 118-122 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2543
Melb 3001
(DX 347)
Ph. 9629 3011

TITLE PLAN		EDITION 1	TP 452231U

Location of Land

Parish: BERWICK
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP 52810
Derived From: VOL 8481 FOL 687
Depth Limitation: 50 FEET

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES REFERRED TO

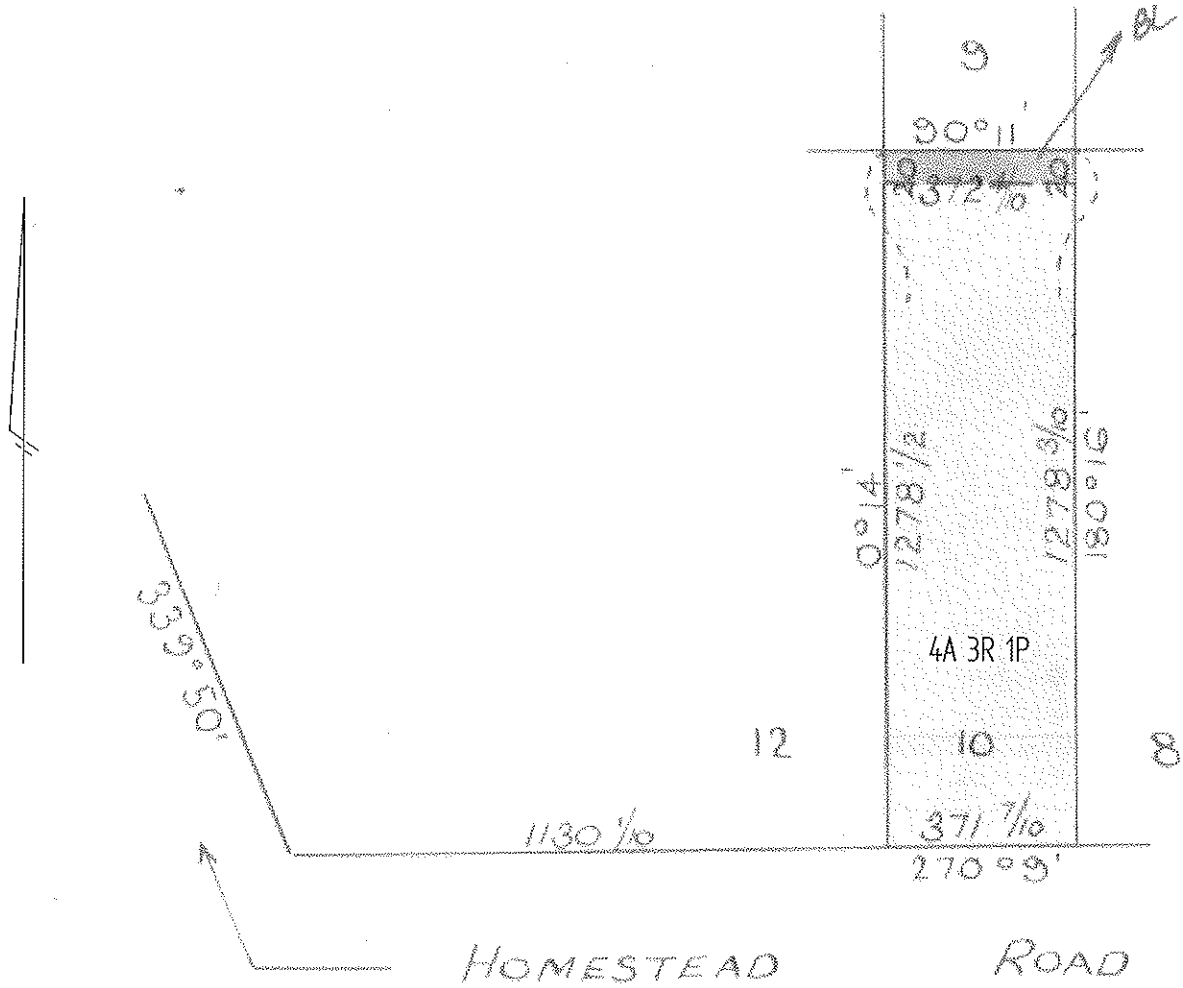
As to the land coloured blue -

ANY EASEMENTS affecting the - same - - - - - - - - - - - - - - - - - -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT

COMPILED: 05/07/2002
VERIFIED: AP

COLOUR CODE
BL=BLUE



LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Number: **10422858**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL_NEWELL**	**Title 8527/362**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585057G Volume 8527 Folio 362

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08527 FOLIO 362

Security no : 124033585056H
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 8 on Plan of Subdivision 052810.
PARENT TITLE Volume 08290 Folio 381
Created by instrument C002668 07/08/1964

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
DAVID JOHN CONYERS BUTTON
JUDITH HENDRICA ANTONIA PETRONELLA BUTTON both of 14 GIFFORD CL BERWICK
R678081C 09/12/1991

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AG934265E 19/12/2009
COMMONWEALTH BANK OF AUSTRALIA

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP624218E FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 112-116 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2039
Melb 3001
(DX 301)
Ph. 9629 3011

TITLE PLAN		EDITION 1	TP 624218E

Location of Land

Parish: BERWICK
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP52810
Derived From: VOL 8527 FOL 362
Depth Limitation: 50 FEET

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES REFERRED TO

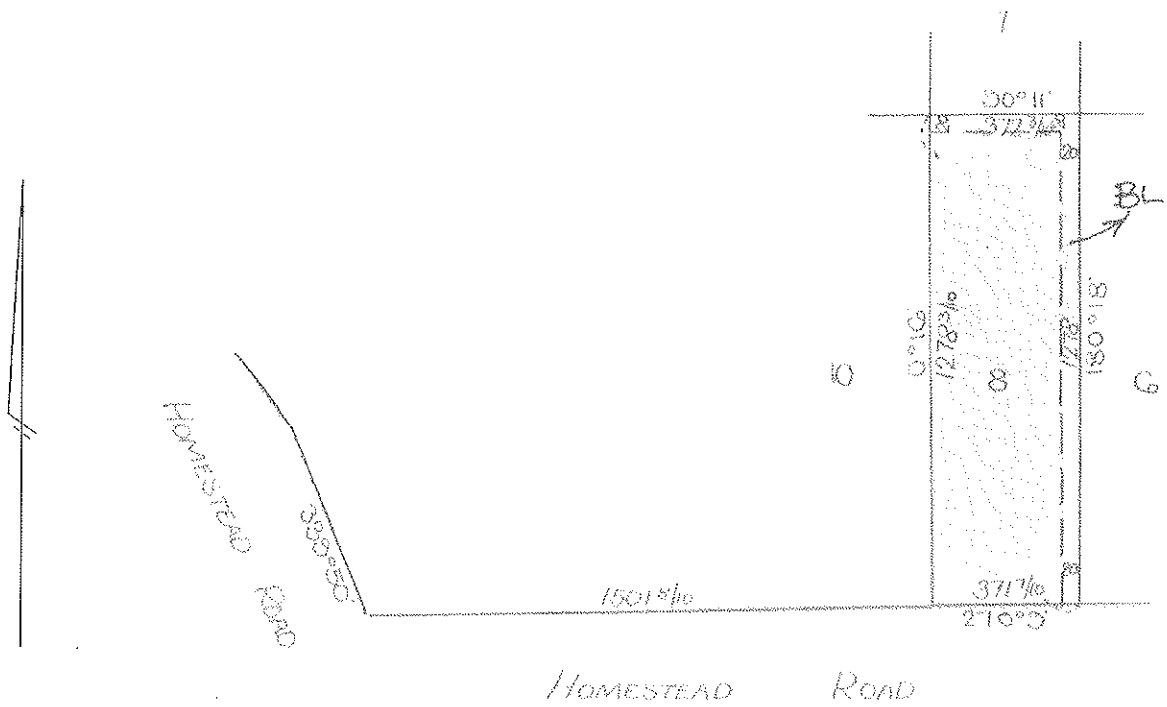
As to the land coloured blue –

ANY EASEMENTS affecting the same –

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT

COMPILED: 10/04/2003
VERIFIED: RZ

COLOUR CODE
BL = BLUE



LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Number: **10422861**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8552/568**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585063A Volume 8552 Folio 568

Produced 04/05/2010 03:17 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08552 FOLIO 568

Security no : 124033585062C
Produced 04/05/2010 03:17 pm

LAND DESCRIPTION
Lot 6 on Plan of Subdivision 052810.
PARENT TITLE Volume 08338 Folio 176
Created by instrument C138830 29/01/1965

REGISTERED PROPRIETOR
Estate Fee Simple
Joint Proprietors
MARK JOSEPH CAULFIELD
ISOBEL JOY CAULFIELD both of 106 HOMESTEAD RD BERWICK 3806
U733071G 22/04/1997

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE U733072D 22/04/1997
NATIONAL AUSTRALIA BANK LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 106-110 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX [illegible]
Melb 3001
(DX [illegible])
Ph. 9629 3011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810
EDITION 4
APPROVED 2/12/60

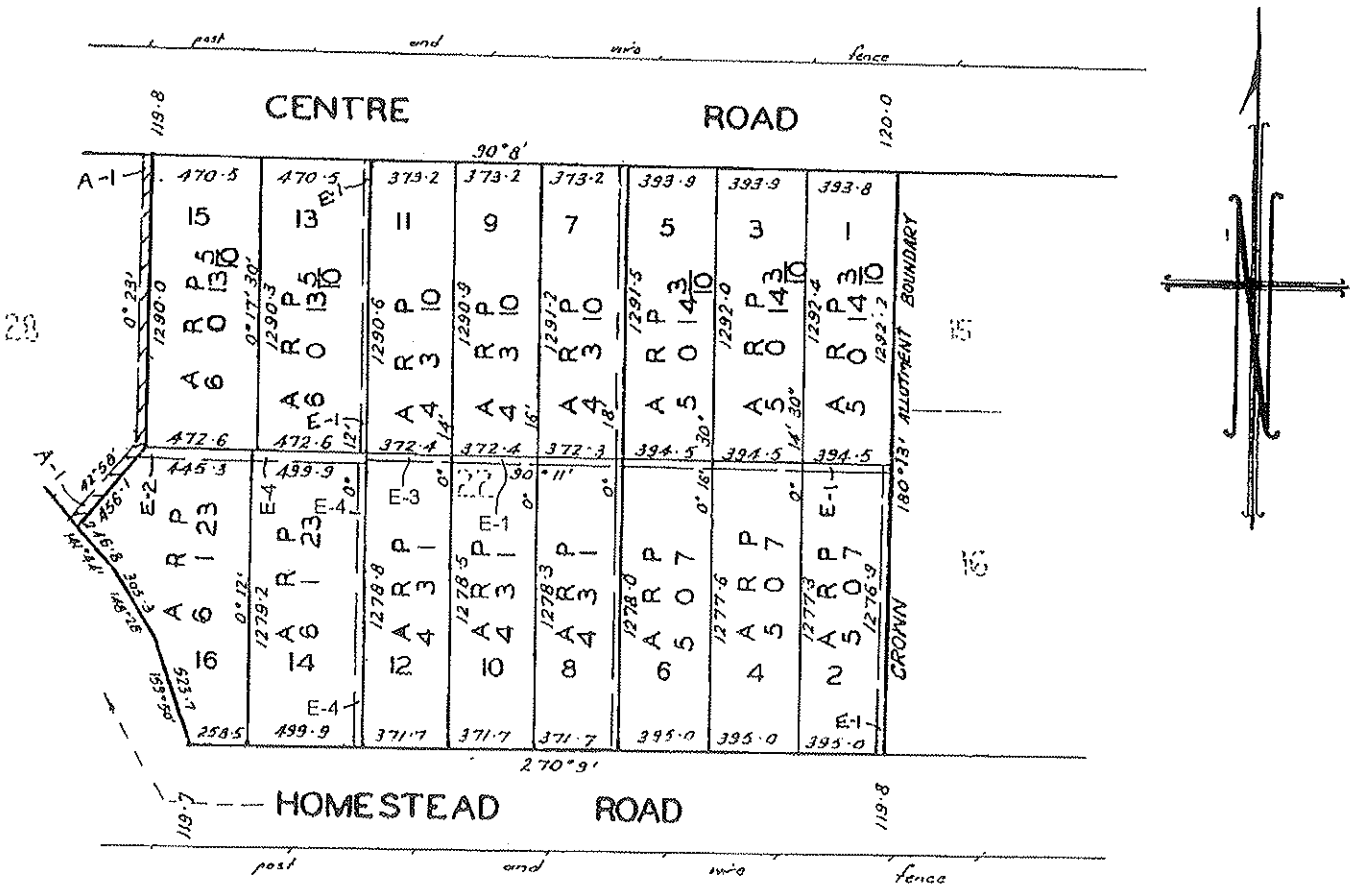
COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS
THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE
THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES
The land coloured green-hatched is an appurtenant easement
See condition in S/D K6971 F.051

NOTATIONS
Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E-3	EASEMENT NOTATION	F284020			2	
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Product Report

Number: **10422863**

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 8519/196**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585069T Volume 8519 Folio 196

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 08519 FOLIO 196

Security no : 124033585068U
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Lot 4 on Plan of Subdivision 052810.
PARENT TITLE Volume 08338 Folio 176
Created by instrument B942906 28/05/1964

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
HENMAL NOMINEES PTY LTD of SUITE 12 51-55 CITY ROAD SOUTHBANK VIC 3006
AF010186M 16/04/2007

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE LP052810 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 100-104 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 3343
Melb 3001
(DX 0)
Ph. 9629 3011

PLAN OF SUBDIVISION OF CROWN ALLOTMENT 22 SECTION 4

PARISH OF BERWICK

COUNTY OF MORNINGTON

VOL.6313 FOL.479

Measurements are in Links
Conversion Factor
LINKS X 0.201168 = METRES

DEPTH LIMITATION: 50 FEET

LP52810

EDITION 4

APPROVED 2/12/60

COLOUR CONVERSION
E-1 & E-3 = BLUE
E-2 & E-4 = GREEN
A-1 = GREEN HATCHED

APPROPRIATIONS

THE LAND COLOURED BLUE IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 20 LINKS WIDE

THE LAND COLOURED GREEN IS APPROPRIATED OR SET APART FOR EASEMENTS OF DRAINAGE AND IS 30 LINKS WIDE

ENCUMBRANCES

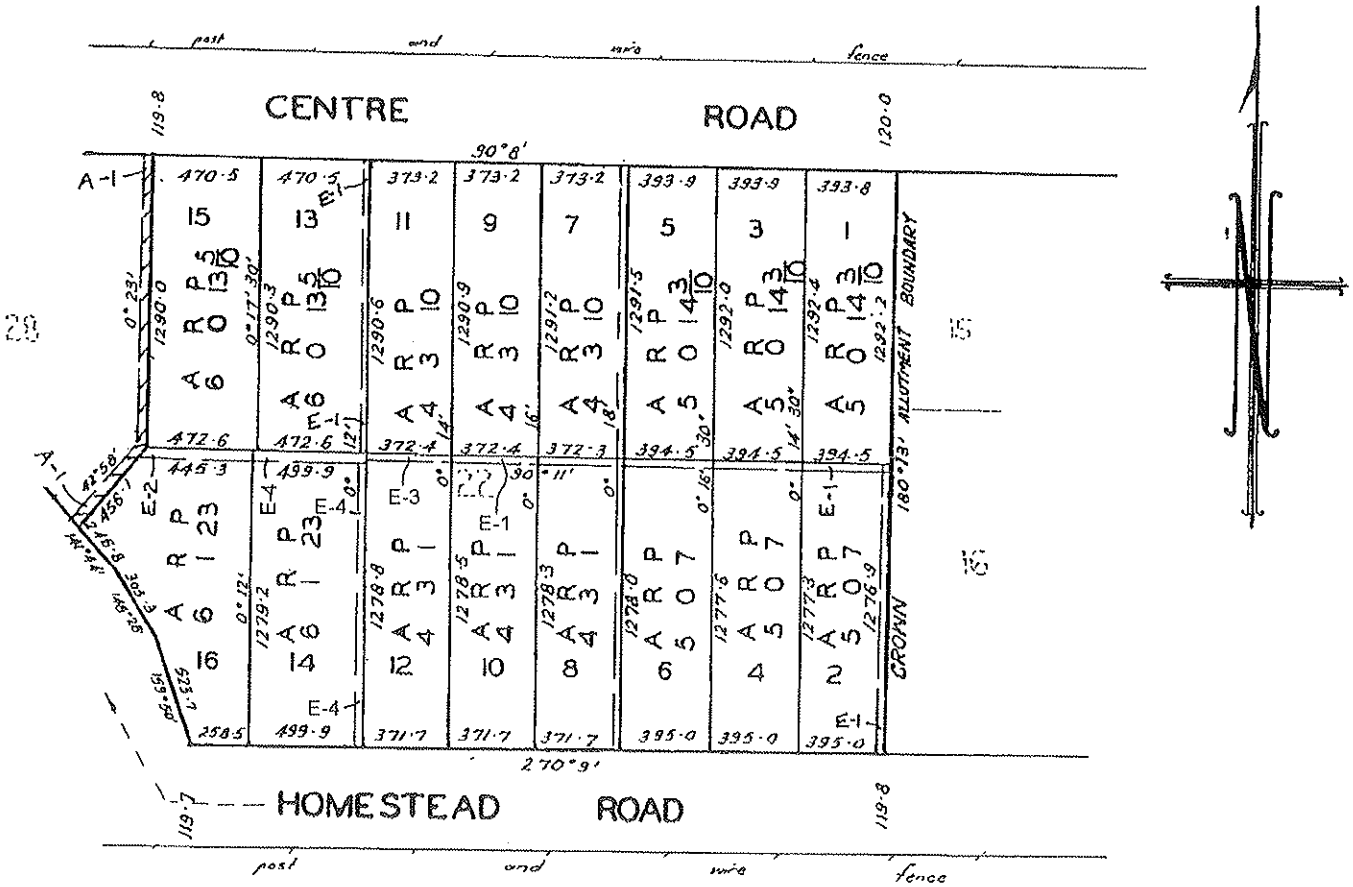
AS TO THE LAND MARKED E-3 & E-4 ANY EASEMENTS AFFECTING THE SAME

APPURTENANCIES

The land coloured green-hatched is an appurtenant easement
See condition in S/G K697I F.051

NOTATIONS

Road widths are not to scale



MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

LP 52810

AFFECTED LAND / PARCEL	LAND / PARCEL / IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
Lot 1	E-3	EASEMENT NOTATION	F284020			2	a
LOT 1	NIL	REMOVAL OF EASEMENT	PS501147B	30/7/2004		3	ART
WARNING: THE IMAGE OF THIS DOCUMENT OF THE REGISTER HAS BEEN DIGITALLY AMENDED. NO FURTHER AMENDMENTS ARE TO BE MADE TO THE ORIGINAL DOCUMENT OF THE REGISTER.							
LOTS 12 & 14	E-3 & E-4	EASEMENTS ENHANCED				4	AD

LP052810. Page 2 of 2. Printed 15:16 04/05/2010. Search Enquiry 0422839. Customer 13500

Number: **10422864**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 9505/982**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585074N Volume 9505 Folio 982

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09505 FOLIO 982 Security no : 124033585072Q
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Lot 1 on Title Plan 085701C (formerly known as Lot 2 on Plan of Subdivision 052810).
PARENT TITLE Volume 08666 Folio 351
Created by instrument K301957 18/03/1983

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
HENMAL NOMINEES PTY LTD of SUITE 12 51-55 CITY ROAD SOUTHBANK VIC 3006
AF010186M 16/04/2007

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE TP085701C FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 94-98 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

PEIGL & NEWELL
Title Searchers
GPO BOX 2048
Melb 3001
(DX 331)
Ph. 9629 3011

TITLE PLAN		EDITION 1	TP 85701C

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 22 (PT)
Crown Portion:

Last Plan Reference: LP 52810
Derived From: VOL 9505 FOL 982
Depth Limitation: 15.24 m

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES REFERRED TO

As to the land shown marked A and B - - -
ANY EASEMENTS affecting the same - - - - -
As to the land shown marked B and C - - -
THE EASEMENT to State Rivers and Water - -
Supply Commission created by - - - - - -
Instrument F153317 - - - - - - - - - - -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 28/07/1999
VERIFIED: AD

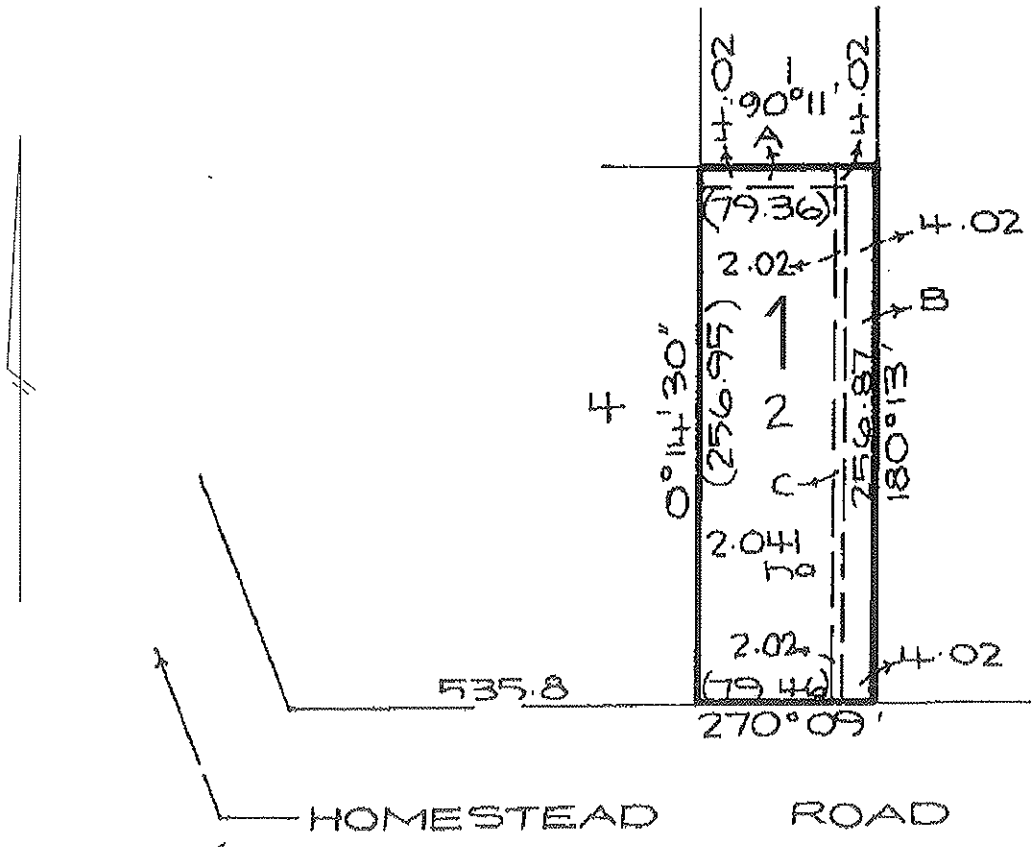

TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = LOT 2 ON LP 52810

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Number: **10422869**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10124/981**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585087Y Volume 10124 Folio 981

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10124 FOLIO 981

Security no : 124033585083D
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Lot 1 on Plan of Subdivision 323945M.
PARENT TITLE Volume 06489 Folio 783
Created by instrument PS323945M 22/07/1993

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
BUDDHIST VIHARA VICTORIA INC of 125 HOMESTEAD ROAD BERWICK VIC 3806
AD335415D 30/12/2004

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AF587691B 15/01/2008
NATIONAL AUSTRALIA BANK LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

AGREEMENT Section 173 PLANNING AND ENVIRONMENT ACT 1987
S475447F 07/05/1993

DIAGRAM LOCATION
SEE PS323945M FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 125 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO Box 2043
Melb 3001
(DX 301)
Ph. 9629 3011

PLAN OF SUBDIVISION

Stage No.	LTO use only	Plan Number
/	EDITION 1	PS 323945M

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 18
Crown Portion:

LTO base record: PARISH PLAN (2131)
Title References CROWN GRANT VOL.6489 FOL.783
Last Plan Reference:

Postal Address: WARD & HOMESTEAD ROADS
BERWICK 3806

AMG Co-ordinates (Of approx. centre of plan) E 353,030 N 5,786,470 Zone 55

Council Certification and Endorsement

Council Name : CITY OF BERWICK Ref. 9465.1.55-01

1. This Plan is certified under section 6 of the Subdivision Act 1988

~~2. This Plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under Section 6 / /~~

~~3. This is a Statement of Compliance issued under Section 21 of the Subdivision Act 1988.~~

Open Space

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied.

~~(iii) The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 30/4/93

Re-certified under section 11 (7) of the Subdivision Act 1988

Council Delegate
Council Seal
Date / /

Vesting of Roads or Reserves

Identifier	Council/ Body/ Person
RESERVE NO. 1	MELBOURNE WATER CORPORATION

NOTATIONS

Depth Limitation 15·24 metres below the surface

Staging This is not a staged subdivision

Planning Permit No. P 214/92

Survey This plan is based on survey

This survey has been connected to permanent marks no(s). 2,38 & 135 in Proclaimed Survey Area no. 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/ In Favour Of
E-1	DRAINAGE	4·02	CROWN GRANT VOL.6489 FOL.783	ADJOINING & ADJACENT LAND, AUTHORISED AUTHORITIES SEE CROWN GRANT Vol.6489 Fol.783
E-2	PIPELINE AND CHANNEL	10·00	THIS PLAN IN ACCORDANCE WITH SECTION 258 BA OF THE M.M.B.W. ACT	MELBOURNE WATER CORPORATION

LTO use only

Statement of Compliance/ Exemption Statement Received ✓

Date: 9/7/93

LTO use only

PLAN REGISTERED

TIME 11·25

DATE 22/7/93

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

LICENSED SURVEYOR JOHN ACTON DAWSON
SIGNATURE ..... DATE 7-4-93
REF. 5333 VERSION 2
Checked by BCH Date 7/4/93 Initialed ...

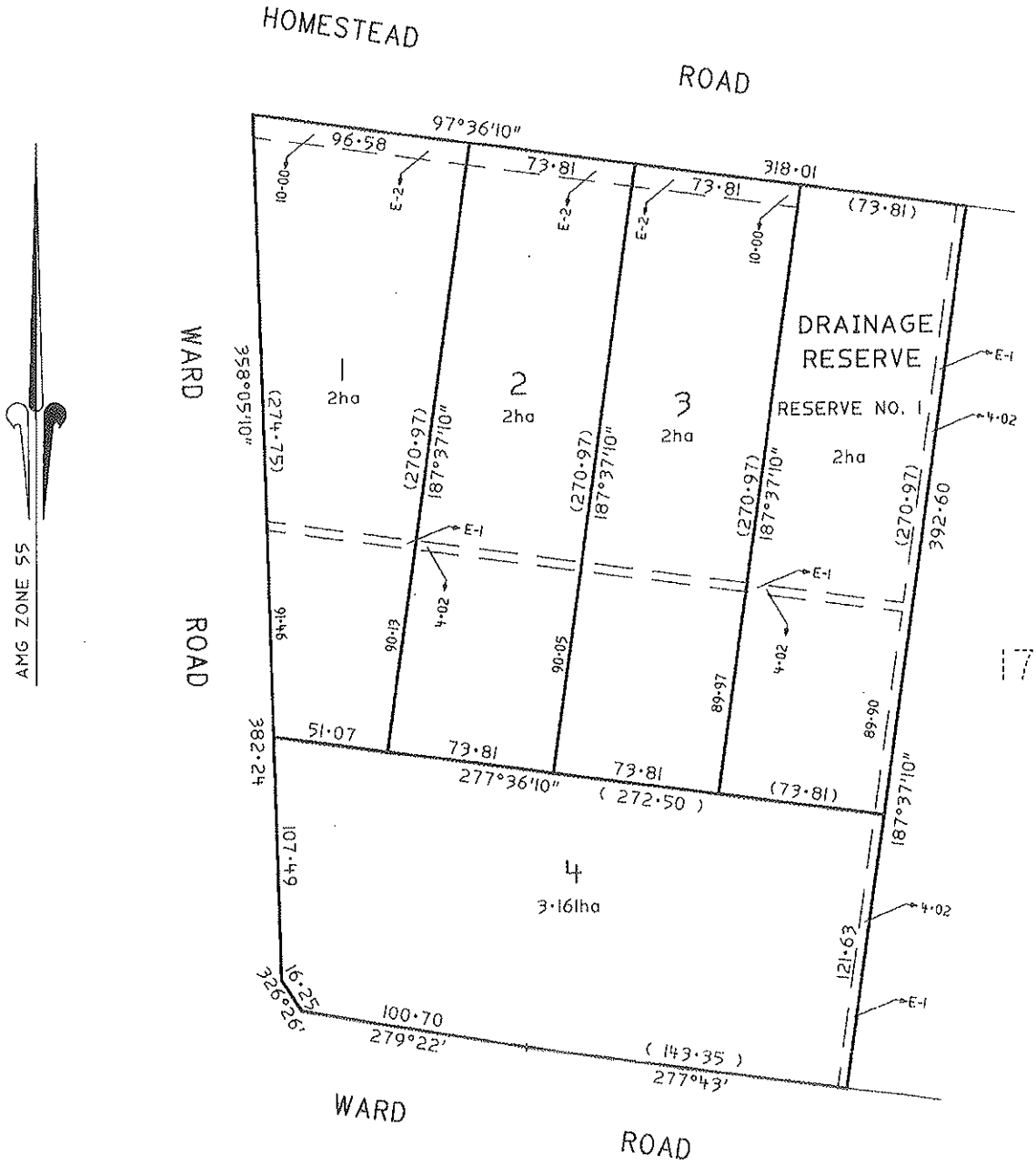
Date 30-4-93
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No. /

Plan Number PS 323945M



HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

ORIGINAL SHEET SIZE A3 | SCALE 1:2000

SCALE 40 0 40 80 LENGTHS ARE IN METRES

LICENSED SURVEYOR JOHN ACTON DAWSON

SIGNATURE ..... DATE 7-4-93

REF. 5333 VERSION 2

Checked by BGH Date 7/4/93 Initiated .....

Sheet 2 of 2 Sheets

Date 30-4-93

COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 mm

HILL + DAWSON

Lodged by CITY OF BERWICK

Code 2879L

OFFICE OF TITLES E. C. VICTORIA

S475447F

07/5/93 1240 MISC 156 S475447F

Form 9.1

VICTORIA

1 X AGREEMENT

APPLICATION BY A RESPONSIBLE AUTHORITY under Section 181 *Planning and Environment Act* 1987 for **ENTRY OF A MEMORANDUM OF AGREEMENT** under Section 173 of the Act.

The Responsible Authority under the Planning Scheme having entered into an Agreement with the parties named for the land described requires that a memorandum of the Agreement be entered on the Certificate(s) of Title to the land referred to.

LAND (insert Certificate of Title Volume and Folio)

CROWN GRANT VOL. 5849 FOLIO 783

V. 6489

ADDRESS OF THE LAND

1 WARD ROAD, BERWICK

RESPONSIBLE AUTHORITY (name and address)

CITY OF BERWICK, PRINCES HIGHWAY, NARRE WARREN 3805

PLANNING SCHEME

BERWICK PLANNING SCHEME

AGREEMENT DATE

20 APRIL 1993

AGREEMENT WITH (Name and Address)

TERENCE & DOREEN WINIFRED RUTHERFORD
BERGINS ROAD
ROWVILLE

A copy of the Agreement is attached to this Application.

Signature for the Responsible Authority

Name of Officer ACTING CHIEF EXECUTIVE

Date

13/5/93

S475447F

THIS AGREEMENT made the Twentieth day April 1993.

BETWEEN

THE MAYOR, COUNCILLORS AND CITIZENS OF THE CITY OF BERWICK ("the Council") of the first part

AND

TERENCE & DOREEN WINIFRED RUTHERFORD BERGINS ROAD, ROWVILLE ("the Subdivider") of the second part

WHEREAS

A. The Subdivider is the registered proprietor of land situated at 1 Ward Road, Berwick in the said State being Crown Allotment 18, Parish of Berwick being the land more particularly described in Crown Grant Volume 6489 Folio 783 ("the subject land").

B. The Subdivider has made application to the Council to subdivide the land described in the said Crown Grant into 5 parcels and to create as vacant lots, being the land on Lots 1 to 4 inclusive on Plan of Subdivision PS 323954M.

C. The Council has resolved to grant Permit No. P 214/92 ("the permit") to subdivide, and Condition No. 3.3 of this permit requires the subdivider to enter into an agreement to ensure that a designated effluent disposal area is retained until reticulated sewerage becomes available.

D. The parties have agreed that without restricting or limiting their respective powers to enter into this Agreement insofar as it can be so treated this Agreement shall be treated as being an Agreement under Section 173 of the Planning and Environment Act 1987 ("the Act").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS

1. The Subdivider with the intent that the covenants hereunder shall run with the land hereby covenants and agrees that it will:

   (a) Comply with the conditions of the Permit.

   (b) Not erect or cause to be erected any buildings on the subject land within the effluent disposal fields specified by hatching or cross-hatching on the plan annexed hereto ("the plan").

   (c) Not excavate or fill or cause to be excavated or filled any part of the subject land specified by hatching or cross-hatching on the plan.

   (d) Ensure that all household waste water generated on the subject land is discharged to an all waste septic tank prior to disposal via effluent disposal trenches, within the Effluent Disposal Field to the satisfaction of the Council.

   (e) Not sell, transfer or otherwise part with possession of the subject land or any part thereof without making any purchaser or transferee or other person to gain possession of the subject land or part thereof aware of the constraints on the development of the land as detailed in this Agreement;

2. The Subdivider agrees to do all things necessary to enable the Council to enter a Memorandum of this Agreement on the Certificate of Title to the subject land in accordance with Section 181 of the Act.

3. The Subdivider covenants and agrees to do all things necessary including the signing of such further agreements or other documents that may be required to ensure these covenants and agreements are carried out and effected.

4. The Subdivider will pay the costs of the Council in connection with the preparation of and execution of this Agreement and the lodging of this agreement at the Land Titles Office.

IN WITNESS WHEREOF the parties have hereto set their hands and seals the day and year first hereinbefore written.

THE COMMON SEAL OF THE MAYOR,

COUNCILLORS AND CITIZENS OF THE

CITY OF BERWICK was hereto

affixed in the presence of

..... COUNCILLOR

..... COUNCILLOR

..... A/TOWN CLERK

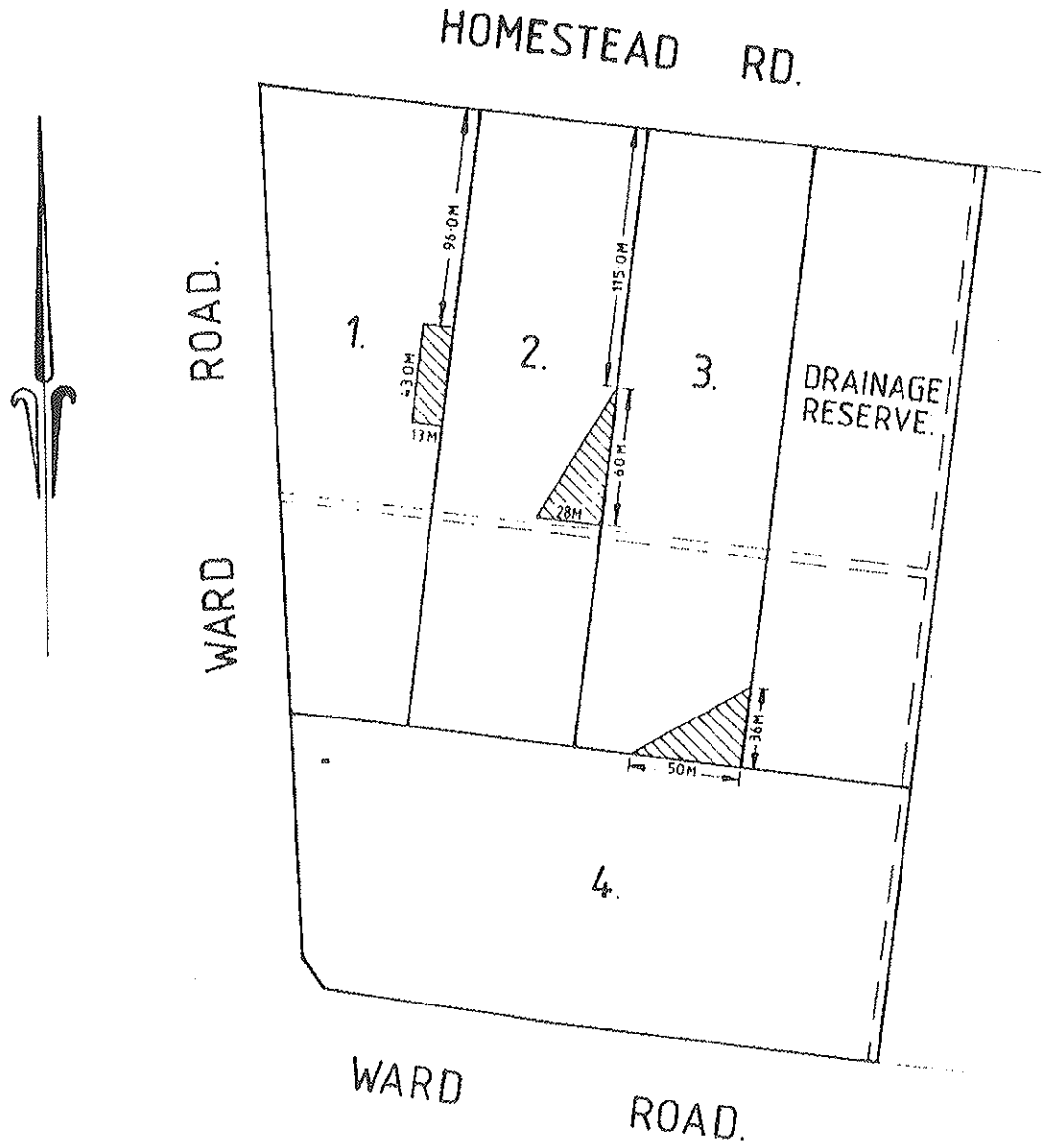
SIGNED, SEALED AND DELIVERED by the said

..... TERENCE RUTHERFORD

..... DOREEN WINIFRED RUTHERFORD

in the presence of:

.....



EFFLUENT DISPOSAL FIELD.

	R G.	MANAGER HEALTH SERVICES	CITY OF BERWICK
	J R S.	SCALE. 1:2000.	EFFLUENT DISPOSAL FIELDS FOR 5 LOT PLAN SUBDIVISION AT THE SOUTH EAST CORNER OF HOMESTEAD ROAD & WARD ROAD BERWICK.
	17-3-93		
	FB No	Sheet 1. of 1.	Drg No M 330.

A1

DATED Twentieth April 1993

THE MAYOR, COUNCILLORS AND CITIZENS OF THE CITY OF BERWICK
First Part

- and -

TERENCE RUTHERFORD
DOREEN WINIFRED RUTHERFORD
Second Part

AGREEMENT PURSUANT TO SECTION 173 PLANNING & ENVIRONMENT ACT 1987

S475447F, Page 6 of 6, Printed 15:22 04/05/2010, Search Enquiry 0422901, Customer 13500

Number: **10422871**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10124/982**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585092T Volume 10124 Folio 982

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH008214F	DISCHARGE LAND TAX CHARGE	Registered	02/02/2010
AH039938K	WITHDRAWAL OF CAVEAT	Registered	23/02/2010
AG964485U	NOTICE OF ACTION	Abandoned	23/02/2010

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10124 FOLIO 982

Security no : 124033585089W
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Lot 2 on Plan of Subdivision 323945M.
PARENT TITLE Volume 06489 Folio 783
Created by instrument PS323945M 22/07/1993

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
ORIENT TRADING PTY LTD of 198 A'BECKETT ROAD NARRE WARREN NORTH VIC 3804
AD166052E 08/10/2004

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AE788715C 14/12/2006
WESTPAC BANKING CORPORATION

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

AGREEMENT Section 173 PLANNING AND ENVIRONMENT ACT 1987
S475447F 07/05/1993

DIAGRAM LOCATION
SEE PS323945M FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH008214F	DISCHARGE LAND TAX CHARGE	Registered	02/02/2010
AH039938K	WITHDRAWAL OF CAVEAT	Registered	23/02/2010
AG964485U	NOTICE OF ACTION	Abandoned	23/02/2010

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 117-123 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 7065
Melb 3001
(DX 38)
Ph. 9629 3011

PLAN OF SUBDIVISION

Stage No.	LTO use only	Plan Number
/	EDITION 1	PS 323945M

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 18
Crown Portion:

LTO base record: PARISH PLAN (2131)
Title References CROWN GRANT VOL.6489 FOL.783
Last Plan Reference:

Postal Address: WARD & HOMESTEAD ROADS
BERWICK 3806

AMG Co-ordinates (Of approx. centre of plan) E 353,030 N 5,786,470 Zone 55

Council Certification and Endorsement

Council Name : CITY OF BERWICK Ref. 9465.1.55-01

1. This Plan is certified under section 6 of the Subdivision Act 1988
2. ~~This Plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under Section 6 / /~~
3. ~~This is a Statement of Compliance issued under Section 21 of the Subdivision Act 1988.~~

Open Space

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied.

(iii) ~~The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 30/4/93

Re-certified under section 11 (7) of the Subdivision Act 1988

Council Delegate
Council Seal
Date / /

Vesting of Roads or Reserves

Identifier	Council/ Body/ Person
RESERVE NO. 1	MELBOURNE WATER CORPORATION

NOTATIONS

Depth Limitation 15·24 metres below the surface

Staging This is not a staged subdivision

Planning Permit No. P 214/92

Survey This plan is based on survey

This survey has been connected to permanent marks no(s). 2,38 & 135 in Proclaimed Survey Area no. 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/ In Favour Of
E-1	DRAINAGE	4·02	CROWN GRANT VOL.6489 FOL.783	ADJOINING & ADJACENT LAND, AUTHORISED AUTHORITIES SEE CROWN GRANT Vol.6489 Fol.783
E-2	PIPELINE AND CHANNEL	10·00	THIS PLAN IN ACCORDANCE WITH SECTION 258BA OF THE M.M.B.W. ACT	MELBOURNE WATER CORPORATION

LTO use only

Statement of Compliance/ Exemption Statement Received ✓

Date: 9/7/93

LTO use only

PLAN REGISTERED

TIME 11·25

DATE 22/7/93

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

LICENSED SURVEYOR JOHN ACTON DAWSON
SIGNATURE ..... DATE 7-4-93
REF. 5333 VERSION 2
Checked by BCH Date 7/4/93 Initialed

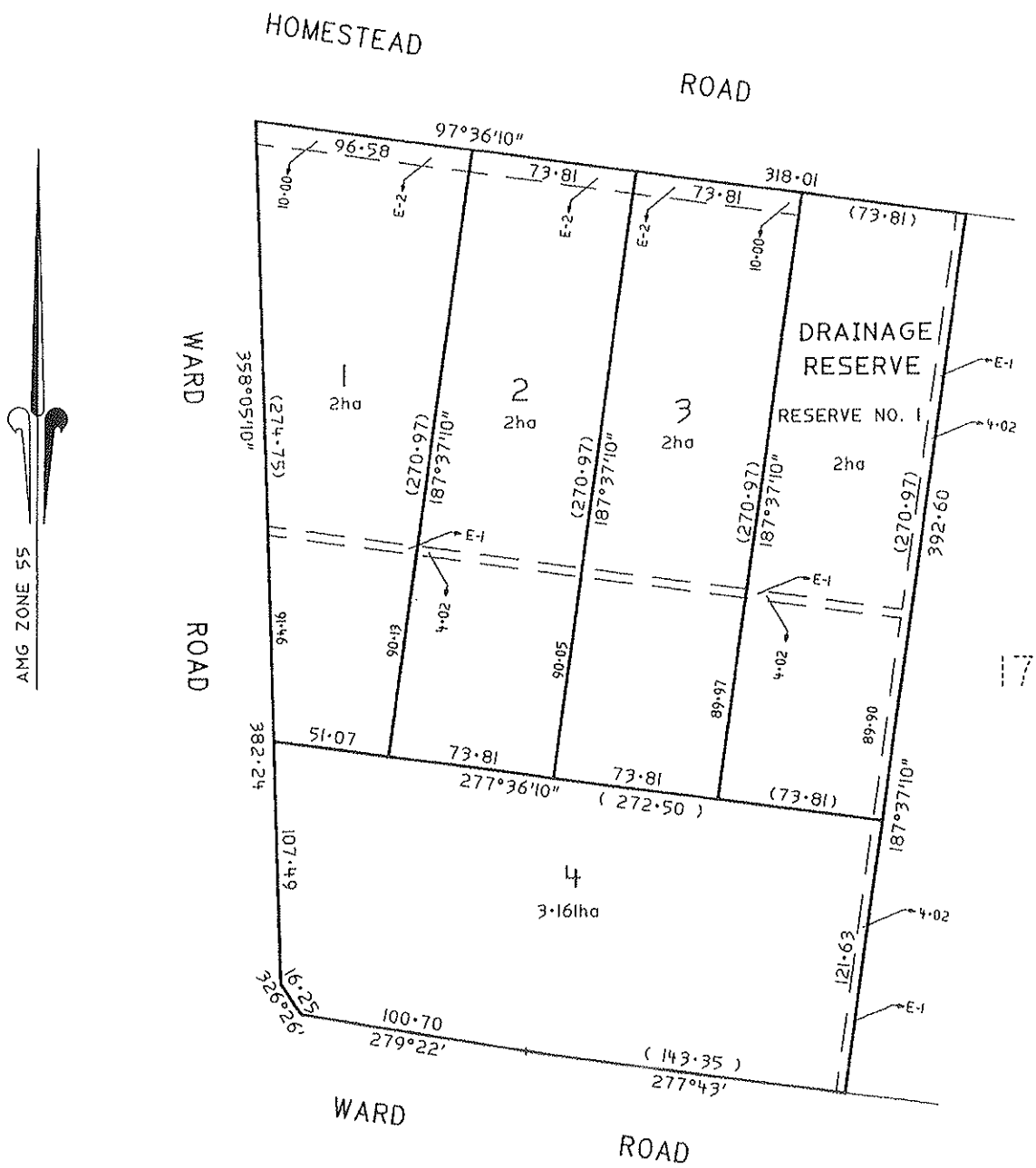
Date 30-4-93
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No. /

Plan Number PS 323945M



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TEL 7948544 FAX 7934130 DX 17574

ORIGINAL SHEET SIZE A3 | SCALE 1:2000 | SCALE 40 0 40 80 LENGTHS ARE IN METRES

LICENSED SURVEYOR JOHN ACTON DAWSON

SIGNATURE ..... DATE 7-4-93

REF. 5333 VERSION 2

Checked by BGH Date 7/4/93 Initialed

Sheet 2 of 2 Sheets

Date 30-4-93

COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 mm

Number: **10422874**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10124/983**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585101J Volume 10124 Folio 983

Produced 04/05/2010 03:18 PM

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH006746F	DISCHARGE LAND TAX CHARGE	Registered	02/02/2010
AH039938K	WITHDRAWAL OF CAVEAT	Registered	23/02/2010
AG964485U	NOTICE OF ACTION	Abandoned	23/02/2010

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10124 FOLIO 983

Security no : 124033585096P
Produced 04/05/2010 03:18 pm

LAND DESCRIPTION
Lot 3 on Plan of Subdivision 323945M.
PARENT TITLE Volume 06489 Folio 783
Created by instrument PS323945M 22/07/1993

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
ORIENT TRADING PTY LTD of 198 A'BECKETT ROAD NARRE WARREN NORTH VIC 3804
AC892223L 31/05/2004

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AE788715C 14/12/2006
WESTPAC BANKING CORPORATION

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

AGREEMENT Section 173 PLANNING AND ENVIRONMENT ACT 1987
S475447F 07/05/1993

DIAGRAM LOCATION
SEE PS323945M FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AH006746F	DISCHARGE LAND TAX CHARGE	Registered	02/02/2010
AH039938K	WITHDRAWAL OF CAVEAT	Registered	23/02/2010
AG964485U	NOTICE OF ACTION	Abandoned	23/02/2010

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 109-115 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWTON
Title Searchers
GPO BOX 2045
Melb 3001
(DX 350)
Ph. 9629 8011

PLAN OF SUBDIVISION

Stage No.	LTO use only	Plan Number
/	EDITION 1	PS 323945M

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 18
Crown Portion:

LTO base record: PARISH PLAN (2131)
Title References CROWN GRANT VOL.6489 FOL.783
Last Plan Reference:

Postal Address: WARD & HOMESTEAD ROADS
BERWICK 3806

AMG Co-ordinates (Of approx. centre of plan) E 353,030 N 5,786,470 Zone 55

Vesting of Roads or Reserves

Identifier	Council/ Body/ Person
RESERVE NO. 1	MELBOURNE WATER CORPORATION

Council Certification and Endorsement

Council Name : CITY OF BERWICK Ref. 9465.1.55-01

1. This Plan is certified under section 6 of the Subdivision Act 1988

~~2. This Plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under Section 6 / /~~

~~3. This is a Statement of Compliance issued under Section 21 of the Subdivision Act 1988.~~

Open Space

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied.

~~(iii) The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 30/4/93

Re-certified under section 11 (7) of the Subdivision Act 1988

Council Delegate
Council Seal
Date / /

NOTATIONS

Depth Limitation 15·24 metres below the surface

Staging This is not a staged subdivision

Planning Permit No. P 214/92

Survey This plan is based on survey

This survey has been connected to permanent marks no(s). 2,38 & 135 in Proclaimed Survey Area no. 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/ In Favour Of
E-1	DRAINAGE	4·02	CROWN GRANT VOL.6489 FOL.783	ADJOINING & ADJACENT LAND, AUTHORISED AUTHORITIES SEE CROWN GRANT Vol.6489 Fol.783
E-2	PIPELINE AND CHANNEL	10·00	THIS PLAN IN ACCORDANCE WITH SECTION 258BA OF THE M.M.B.W. ACT	MELBOURNE WATER CORPORATION

LTO use only

Statement of Compliance/ Exemption Statement Received ☑

Date: 9/7/93

LTO use only

PLAN REGISTERED

TIME 11·25

DATE 22/7/93

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

LICENSED SURVEYOR JOHN ACTON DAWSON
SIGNATURE ..... DATE 7-4-93
REF. 5333 VERSION 2
Checked by BCH Date 7/4/93 Initialed .....

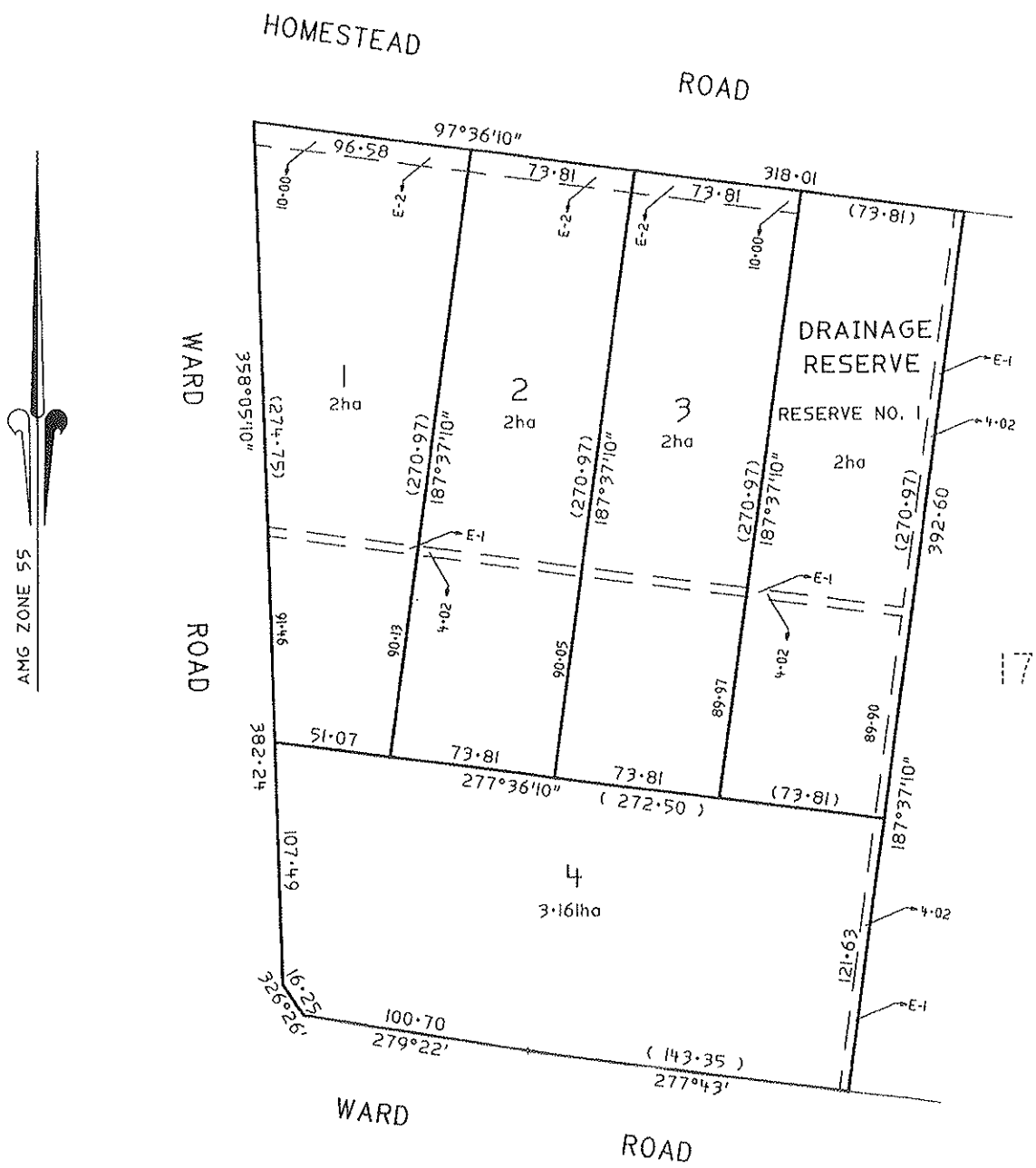
Date 30-4-93
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No. /

Plan Number PS 323945M



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TEL. 7948544 FAX 7934130 DX 17574

ORIGINAL SHEET SIZE A3 | SCALE 1:2000

SCALE 40 0 40 80 LENGTHS ARE IN METRES

LICENSED SURVEYOR JOHN ACTON DAWSON

SIGNATURE ..... DATE 7-4-93

REF. 5333 VERSION 2

Checked by BGH Date 7/4/93 Initialed .....

Sheet 2 of 2 Sheets

Date 30-4-93

COUNCIL DELEGATE SIGNATURE

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Number: **10422894**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10124/984**

Search Statement supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585169K Volume 10124 Folio 984

Produced 04/05/2010 03:20 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10124 FOLIO 984

Security no : 124033585168L
Produced 04/05/2010 03:20 pm

LAND DESCRIPTION
Lot 4 on Plan of Subdivision 323945M.
PARENT TITLE Volume 06489 Folio 783
Created by instrument PS323945M 22/07/1993

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
NADER PTY LTD of "HWT TOWER" LEVEL 23/24 40 CITY ROAD SOUTHGATE VIC 3006
AC767430F 29/03/2004

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AC767431D 29/03/2004
AUSTRALIA AND NEW ZEALAND BANKING GROUP LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

AGREEMENT Section 173 PLANNING AND ENVIRONMENT ACT 1987
S475447F 07/05/1993

DIAGRAM LOCATION
SEE PS323945M FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 1 WARD ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2943
Melb 3001
(DX 301)
Ph. 9629 3011

PLAN OF SUBDIVISION

Stage No.	LTO use only	Plan Number
/	EDITION 1	PS 323945M

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 18
Crown Portion:

LTO base record: PARISH PLAN (2131)
Title References CROWN GRANT VOL.6489 FOL.783
Last Plan Reference:

Postal Address: WARD & HOMESTEAD ROADS
BERWICK 3806

AMG Co-ordinates (Of approx. centre of plan) E 353,030 N 5,786,470 Zone 55

Council Certification and Endorsement

Council Name : CITY OF BERWICK Ref. 9465.1.55-01

1. This Plan is certified under section 6 of the Subdivision Act 1988

~~2. This Plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under Section 6 / / ~~

~~3. This is a Statement of Compliance issued under Section 21 of the Subdivision Act 1988.~~

Open Space

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied.

~~(iii) The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 30/4/93

Re-certified under section 11 (7) of the Subdivision Act 1988

Council Delegate
Council Seal
Date / /

Vesting of Roads or Reserves

Identifier	Council/ Body/ Person
RESERVE NO. 1	MELBOURNE WATER CORPORATION

NOTATIONS

Depth Limitation 15·24 metres below the surface

Staging This is not a staged subdivision

Planning Permit No. P 214/92

Survey This plan is based on survey

This survey has been connected to permanent marks no(s). 2,38 & 135 in Proclaimed Survey Area no. 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/ In Favour Of
E-1	DRAINAGE	4·02	CROWN GRANT VOL.6489 FOL.783	ADJOINING & ADJACENT LAND, AUTHORISED AUTHORITIES SEE CROWN GRANT Vol.6489 Fol.783
E-2	PIPELINE AND CHANNEL	10·00	THIS PLAN IN ACCORDANCE WITH SECTION 258BA OF THE M.M.B.W. ACT	MELBOURNE WATER CORPORATION

LTO use only

Statement of Compliance/ Exemption Statement Received ☑

Date: 9/7/93

LTO use only

PLAN REGISTERED

TIME 11·25

DATE 22/7/93

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

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LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

LICENSED SURVEYOR JOHN ACTON DAWSON
SIGNATURE ..... DATE 7-4-93
REF. 5333 VERSION 2
Checked by BCH Date 7/4/93 Initialed

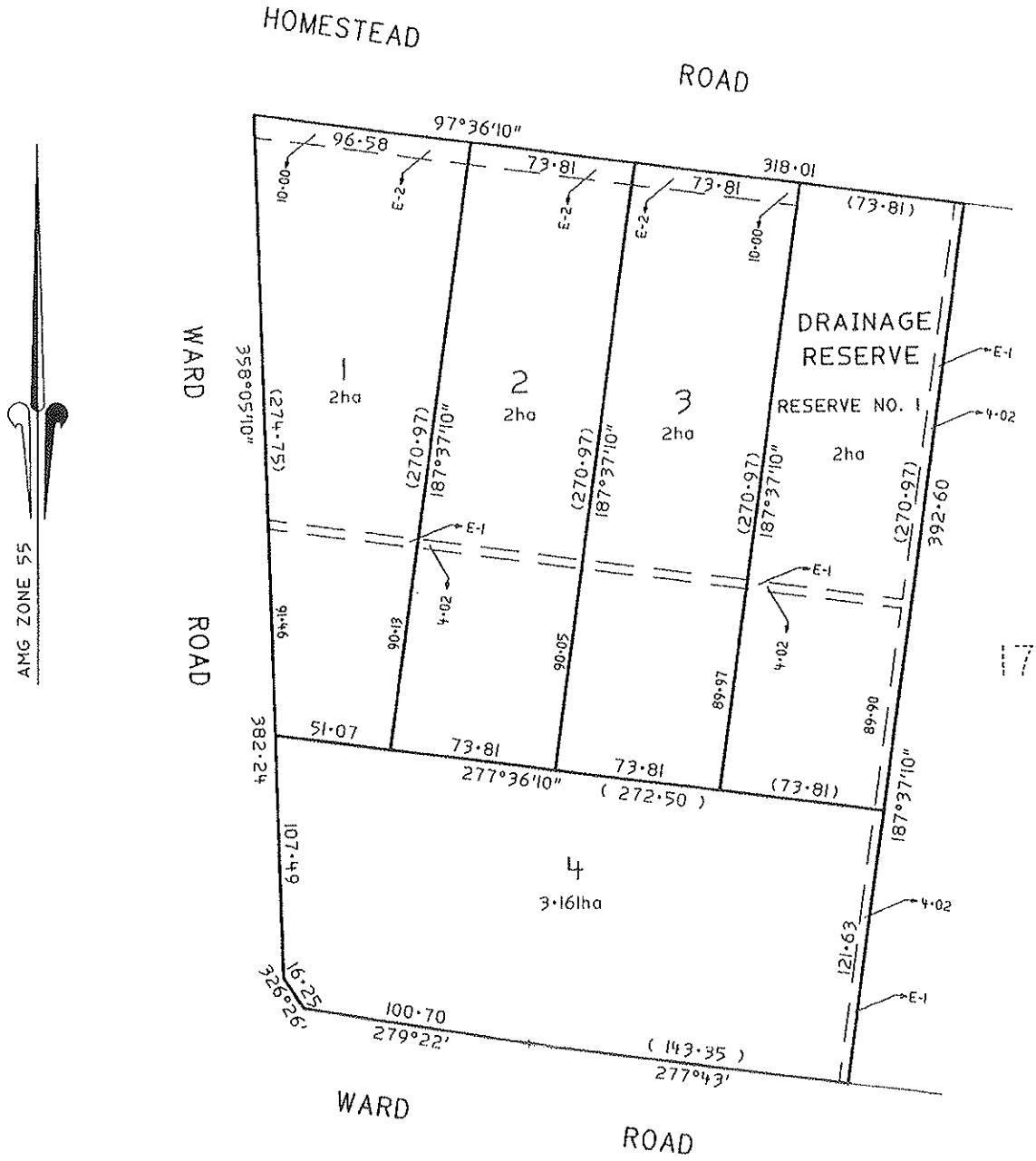
Date 30-4-93
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No. /

Plan Number PS 323945M



HILL & DAWSON
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TEL 7948544 FAX 7934130 DX 17574

ORIGINAL SHEET SIZE A3 | SCALE 1:2000 | SCALE 40 0 40 80 LENGTHS ARE IN METRES

LICENSED SURVEYOR JOHN ACTON DAWSON

SIGNATURE ..... DATE 7-4-93

REF. 5333 VERSION 2

Checked by BGH Date 7/4/93 Initialed .....

Sheet 2 of 2 Sheets

Date 30-4-93

COUNCIL DELEGATE SIGNATURE

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Number: **10422818**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10828/441**

Search Statement supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584931T Volume 10828 Folio 441

Produced 04/05/2010 03:14 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

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Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10828 FOLIO 441 Security no : 124033584923B
Produced 04/05/2010 03:14 pm

LAND DESCRIPTION
Lot 1 on Plan of Subdivision 336088J.
PARENT TITLE Volume 10214 Folio 175
Created by instrument AD040690X 11/08/2004

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
GREGROB INVESTMENTS PTY LTD of SUITE 1 1-3 WESTPOOL DRIVE HALLAM VIC 3803
AD896514T 26/09/2005

ENCUMBRANCES, CAVEATS AND NOTICES
MORTGAGE AD896515R 26/09/2005
NATIONAL AUSTRALIA BANK LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS336088J FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 322-340 CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Search
GPO Box [illegible]
Melb 3001
(DX [illegible])
Ph. 9629 33[illegible]

PLAN OF SUBDIVISION

UNDER SECTION 35 OF THE SUBDIVISION ACT 1988

STAGE No.	LTO USE ONLY	PLAN NUMBER
/	EDITION 2	PS 336088 J

LOCATION OF LAND

PARISH: BERWICK

TOWNSHIP: —

SECTION: 4

CROWN ALLOTMENT: 29 (PART)

CROWN PORTION: —

LTO BASE RECORD: CHART 37(2131)
TITLE REFERENCES: VOL. 8891 FOL. 662

LAST PLAN REFERENCE/S: LP 92396 LOT 1

POSTAL ADDRESS: CENTRE ROAD
(At time of subdivision) BERWICK, 3806

AMG Co-ordinates
(of approx centre of land in plan) E 352 500 N 5787 450 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

Council Name: CITY OF BERWICK Ref:1640.322.SS

A This is a plan under section 35 of the *Subdivision Act* 1988 which does not create any additional lots.

B This plan is exempt from Part 3 of the *Subdivision Act* 1988.

~~C This is a plan under section 35 of the *Subdivision Act* 1988 which creates (an) additional lot(s).~~

D It is certified under section 6 of the *Subdivision Act* 1988.

~~E It is certified under section 11 (7) of the *Subdivision Act* 1988.~~

~~F Date of original certification under section 6. / /~~

G This is a Statement of Compliance under section 21 of the *Subdivision Act* 1988.

(Council delegate)
~~(Council seal)~~
(Date of Certification)

VESTING OF ROADS AND/OR RESERVES

Roads and reserves vest in the council/body/person named when the appropriate vesting date is recorded or transfer registered.

IDENTIFIER	COUNCIL/BODY/PERSON
RESERVE No. 1	MELBOURNE WATER CORPORATION

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision.
Planning Permit No. —

DEPTH LIMITATION 15·24m BELOW THE SURFACE

RESERVE No. 1 ONLY IS SUBJECT TO SURVEY.

Land to be acquired by agreement RESERVE No. 1
~~Land to be acquired by compulsory process.~~

All the land is to be acquired free from all encumbrances other than any easements specified on this plan.

Survey: This plan is/~~is not~~ based on survey.
To be completed where applicable.
This survey has been connected to permanent marks no.s —
In Proclaimed Survey Area No. 45

EASEMENT INFORMATION

Easements marked (+) are created upon registration of this plan.
Easements marked (●) are created when the appropriate vesting date is recorded or transfer registered.
Easements marked (#) are removed when the appropriate vesting date is recorded or transfer registered.

LEGEND A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Symbol	Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
—	—	—	—	—	—

LTO USE ONLY

STATEMENT OF COMPLIANCE/
EXEMPTION STATEMENT

RECEIVED ☑

DATE: 22 / 7 / 94

LTO USE ONLY

PLAN REGISTERED
TIME 2.00(PM)
DATE 26 / 8 / 94

Assistant Registrar of Titles

SHEET 1 OF 2 SHEETS

P.G. Speedie & Associates Pty. Ltd.
SURVEYORS, ENGINEERS, PLANNERS AND DEVELOPMENT CONSULTANTS
9 Queen Street, Melbourne. Vic. 3000 Ph: (03)629 1579
53 Victoria Street, Hastings. Vic. 3915 Ph: (059)79 1655

LICENSED SURVEYOR (PRINT) Andrew M. LOVELOCK

SIGNATURE ..... DATE 23/06/94

REF 5483 VERSION 1

DATE / /

COUNCIL DELEGATE SIGNATURE

ORIGINAL SHEET SIZE A3

Creffkds PS06

PLAN OF SUBDIVISION

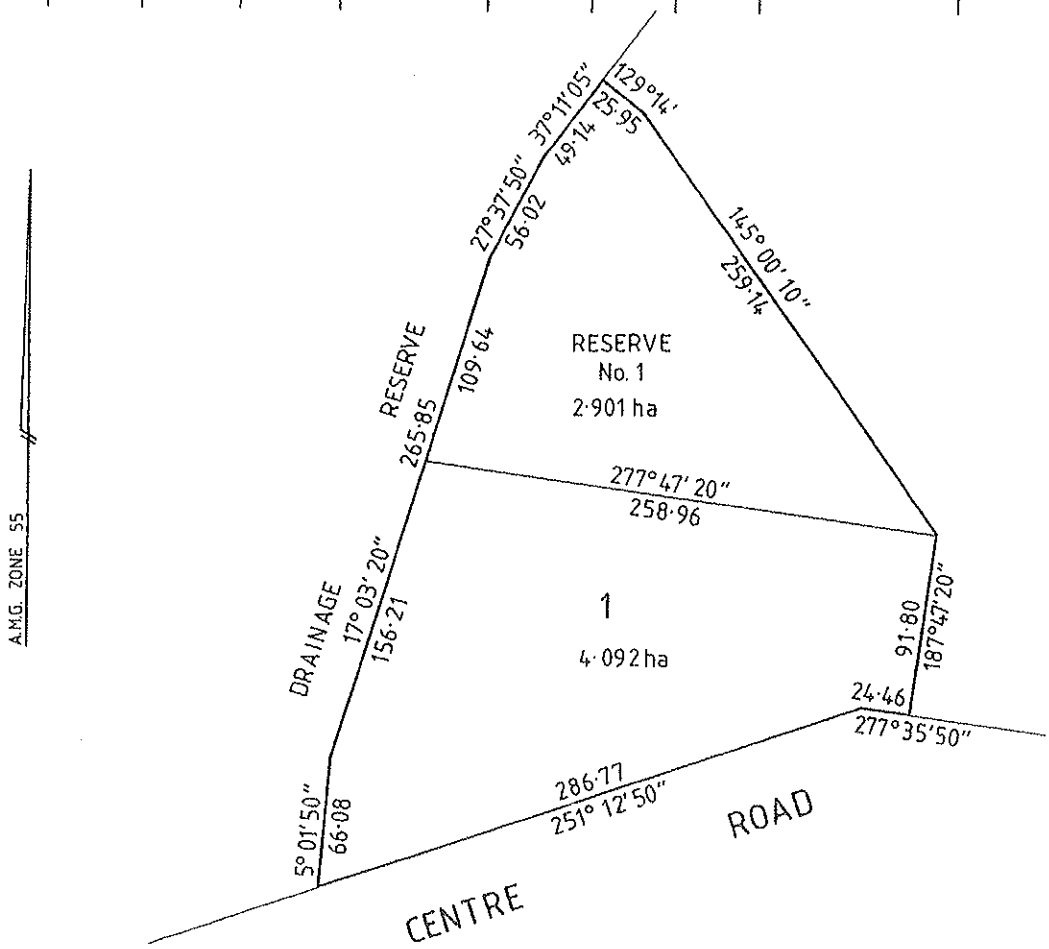
UNDER SECTION 35 OF THE SUBDIVISION ACT 1988

STAGE No. —

PLAN NUMBER **PS 336088 J**

VESTING DATES & TRANSFER REGISTRATION DATES OF ACQUIRED LAND

Land affected	Land acquired by compulsory process prior to certification			Land acquired by compulsory process after registration of plan				Land acquired by agreement	LTO reference of transfers or notifications of vesting dates	Assistant Registrar of Titles Signature
	Vesting date	Gov't Gaz.		Date of recording of vesting date	Vesting date	Gov't Gaz.		Date of registration of transfer		
		Page	Year			Page	Year			
RESERVE No. 1	—	—	—	—	—	—	—	22-12-94	T478448X	



P. G. Speedie & Associates Pty. Ltd.
SURVEYORS, ENGINEERS, PLANNERS AND DEVELOPMENT CONSULTANTS
9 Queen Street, Melbourne. Vic. 3000 Ph: (03)629 1579
53 Victoria Street, Hastings. Vic. 3915 Ph: (059)79 1655

SCALE	ORIGINAL SCALE	ORIGINAL SHEET SIZE	LICENSED SURVEYOR (PRINT)	SHEET 2 OF 2 SHEETS
25 0 25 50 75 100 125 LENGTHS ARE IN METRES	1:2500	A3	Andrew M. LOVELOCK	
			SIGNATURE ..... DATE 23/06/94	DATE / /
			REF 5483 VERSION 1	COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 mm

Creffields PS05

MODIFICATION TABLE
RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER
PS336088J

LAND	MODIFICATION	DEALING REFERENCE	DATE AND TIME ENTERED		NEW EDITION NUMBER	SIGNATURE OF ASSISTANT REGISTRAR OF TITLES
			DATE	TIME		
Res 1	Vesting	T478448X	22-12-94		2	

PS336088J, Page 3 of 3, Printed 15:14 04/05/2010. Search Enquiry 0422815. Customer 13500

Number: **10422820**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL NEWELL**	**Title 10162/789**

Search Statement supplied and Plan to be supplied.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033584937M Volume 10162 Folio 789

Produced 04/05/2010 03:14 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10162 FOLIO 789

Security no : 124033584932S
Produced 04/05/2010 03:14 pm

LAND DESCRIPTION
Reserve 1 on Plan of Subdivision 314788C.
PARENT TITLE Volume 09358 Folio 940
Created by instrument PS314788C 31/03/1994

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
MELBOURNE WATER CORPORATION
PS314788C 31/03/1994

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section

24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS314788C FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 340I CENTRE ROAD BERWICK VIC 3806

DOCUMENT END

FEIGL & NEWELL
Title Searchers
GPO BOX 2044
Melb 3001
(DX 591)
Ph. 9629 30[illegible]

PLAN OF SUBDIVISION

STAGE No.	LTO USE ONLY	PLAN NUMBER
/	EDITION 2	PS 314788 C

LOCATION OF LAND

PARISH: BERWICK

TOWNSHIP: —

SECTION: 4

CROWN ALLOTMENT: 29 (PART)

CROWN PORTION: —

LTO BASE RECORD: LITHO (2131)
TITLE REFERENCES: VOL. 9358 FOL. 940

LAST PLAN REFERENCE/S: L.P. 124970 LOT 1

POSTAL ADDRESS: CENTRE ROAD
(At time of subdivision) BERWICK

AMG Co-ordinates
(of approx centre of land in plan) E 352 680
N 5787 500 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

COUNCIL NAME: CITY OF BERWICK REF: 1640.342.55.01

~~1. This plan is certified under Section 6 of the Subdivision Act 1988.~~

2. This plan is certified under Section 11(7) of the Subdivision Act 1988
Date of original certification under Section 6. 14 / 2 / 92

~~3. This is a statement of compliance issued under Section 21 of the Subdivision Act 1988.~~

OPEN SPACE

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has/~~has not~~ been made.

(ii) The requirement has been satisfied. for Lot 1 only.

~~(iii) The requirement is to be satisfied in Stage .....~~

~~Council Delegate~~
~~Council Seal~~
~~Date 14 / 2 / 92~~

Re-certified under Section 11(7) of the Subdivision Act 1988
Council Delegate
~~Council Seal~~
Date 21 / 5 / 92

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
RESERVE No. 1	MELBOURNE WATER CORPORATION

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision
Planning permit No P. 301/92

DEPTH LIMITATION 15·24 METRES BELOW THE SURFACE.

SURVEY THIS PLAN IS/~~IS NOT~~ BASED ON SURVEY

THIS SURVEY HAS BEEN CONNECTED TO PERMANENT MARKS No.(s)
IN PROCLAIMED SURVEY AREA No.

EASEMENT INFORMATION

LEGEND A – Appurtenant Easement E – Encumbering Easement R – Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT VOL.6971 FOL.051	SEE PLAN	CROWN GRANT VOL. 6971 FOL. 051	SEE CROWN GRANT VOL.6971 FOL.051
E-2	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT VOL.6971 FOL.051	SEE PLAN	CROWN GRANT VOL. 6971 FOL. 051	SEE CROWN GRANT VOL.6971 FOL.051
	SEWERAGE	SEE PLAN	INST. K600194	M.M.B.W.
E-3	SEWERAGE	2·50	INST. K600194	M. M.B.W.
E-4	DRAINAGE	5	THIS PLAN	MELBOURNE WATER
E-5	DRAINAGE	5	THIS PLAN	MELBOURNE WATER
	DRAINAGE AND OTHER PURPOSES SET OUT IN CROWN GRANT VOL.6971 FOL.051		CROWN GRANT VOL.6971 FOL.051	SEE CROWN GRANT VOL.6971 FOL.051
E-6	SEWERAGE	2·50	INST K600194	M.M.B.W.
	DRAINAGE		THIS PLAN	MELBOURNE WATER

LTO USE ONLY

STATEMENT OF COMPLIANCE/
EXEMPTION STATEMENT

RECEIVED ☑

DATE: 28 / 3 / 94

LTO USE ONLY

PLAN REGISTERED

TIME

DATE 31 / 3 / 94

J. Stagonis

Assistant Registrar of Titles

SHEET 1 OF 2 SHEETS

KLM DEVELOPMENT CONSULTANTS
4/50 THOMAS ST.
DANDENONG. 3175
PH.(03) 794 9436

LICENSED SURVEYOR (PRINT) STEPHEN J. McCARTHY

SIGNATURE ..... DATE 14 / 1 / 92

REF 19092 VERSION 3

DATE 21 / 5 / 92

COUNCIL DELEGATE SIGNATURE

ORIGINAL SHEET SIZE A3

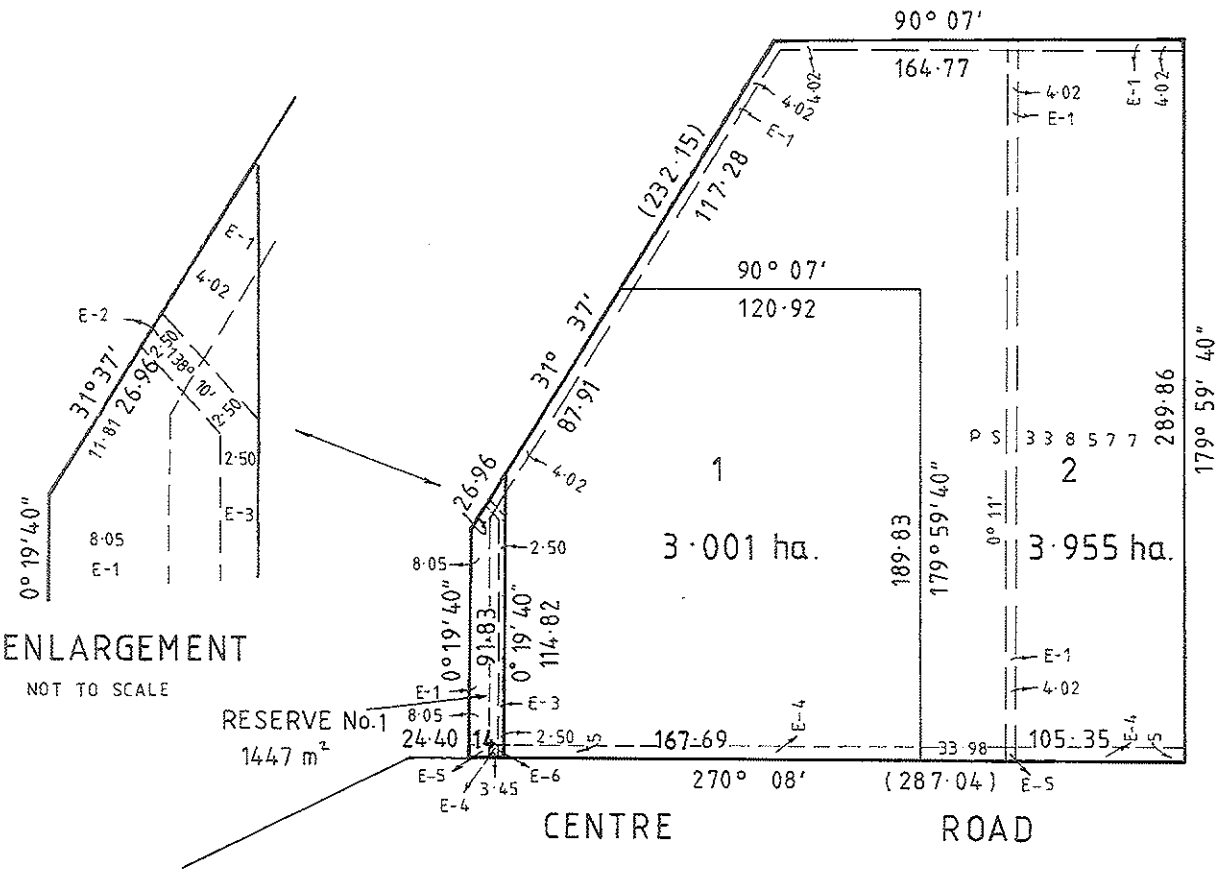
Cref/ekl/j PS01

PS314788C, Page 2 of 3, Printed 15:14 04/05/2010, Search Enquiry 0422820, Customer 13500

PLAN OF SUBDIVISION

STAGE No. /

PLAN NUMBER **PS 314788 C**



KLM DEVELOPMENT CONSULTANTS
4/50 THOMAS ST.
DANDENONG. 3175
PH.(03) 794 9438

SCALE
20 0 20 40 60 80 100
LENGTHS ARE IN METRES

ORIGINAL SCALE	SHEET SIZE
1:2000	A3

LICENSED SURVEYOR (PRINT) STEPHEN J McCARTHY

SIGNATURE ..... DATE 14 / 1 /92

REF 19092 VERSION 3

SHEET 2 OF 2 SHEETS

DATE 21 / 5 /92.

COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

Creffield's PS04

MODIFICATION TABLE
RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER
PS 314788C

LAND	MODIFICATION	DEALING REFERENCE	DATE AND TIME REGISTERED & RECORDED		NEW EDITION NUMBER	SIGNATURE OF ASSISTANT REGISTRAR OF TITLES
			DATE	TIME		
LOT 2	SUBDIVISION	PS 338577			2	

PS314788C, Page 3 of 3, Printed 15:14 04/05/2010, Search Enquiry 0422820, Customer 13500

Number: **10422892**

Product Report

Search Type	Customer	Reference	Document
Register	**13500**	**FEIGL_NEWELL**	**Title 10125/786**

Search Statement supplied.

Plan could not be printed. Request reprint tomorrow.

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FINAL SEARCH STATEMENT Land Victoria

Security No : 124033585164Q Volume 10125 Folio 786

Produced 04/05/2010 03:20 PM

ACTIVITY IN THE LAST 125 DAYS

NIL

STATEMENT END

NOTE

This statement details any dealing with the land being searched which has either been registered within the last 105 days or which remains unregistered other than a dealing affecting a Subdivision Act plan or strata or cluster subdivision a memorandum of which or a reference to which has been or is to be entered on the plan.

If the land is part of a Subdivision Act plan or strata or cluster subdivision the relevant plan should be inspected.

Incl GST:**$0.00** Fee: **$8.95**

Department of Sustainability and Environment

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REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 10125 FOLIO 786

Security no : 124033585162S
Produced 04/05/2010 03:20 pm

LAND DESCRIPTION
Reserve 1 on Plan of Subdivision 323945M.
PARENT TITLE Volume 06489 Folio 783
Created by instrument PS323945M 22/07/1993

REGISTERED PROPRIETOR
Estate Fee Simple
Sole Proprietor
MELBOURNE WATER CORPORATION
PS323945M 22/07/1993

ENCUMBRANCES, CAVEATS AND NOTICES

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION
SEE PS323945M FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 101-107 HOMESTEAD ROAD BERWICK VIC 3806

DOCUMENT END

Hall & [illegible]
Title Se[illegible]
GPO Bo[illegible]
Melb[illegible]
(D[illegible])
[illegible] 9[illegible]011

PLAN OF SUBDIVISION

Stage No.	LTO use only	Plan Number
/	EDITION 1	PS 323945M

Location of Land

Parish: BERWICK
Township:
Section: 4
Crown Allotment: 18
Crown Portion:

LTO base record: PARISH PLAN (2131)
Title References CROWN GRANT VOL.6489 FOL.783
Last Plan Reference:

Postal Address: WARD & HOMESTEAD ROADS
BERWICK 3806

AMG Co-ordinates (Of approx. centre of plan) E 353,030 N 5,786,470 Zone 55

Council Certification and Endorsement

Council Name : CITY OF BERWICK Ref. 9465.1.55-01

1. This Plan is certified under section 6 of the Subdivision Act 1988

~~2. This Plan is certified under section 11(7) of the Subdivision Act 1988. Date of original certification under Section 6 / /~~

~~3. This is a Statement of Compliance issued under Section 21 of the Subdivision Act 1988.~~

Open Space

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 has / ~~has not~~ been made.

(ii) The requirement has been satisfied.

~~(iii) The requirement is to be satisfied in Stage~~

Council Delegate
~~Council Seal~~
Date 30/4/93

Re-certified under section 11 (7) of the Subdivision Act 1988

Council Delegate
Council Seal
Date / /

Vesting of Roads or Reserves

Identifier	Council/ Body/ Person
RESERVE NO. 1	MELBOURNE WATER CORPORATION

NOTATIONS

Depth Limitation 15·24 metres below the surface

Staging This is not a staged subdivision

Planning Permit No. P 214/92

Survey This plan is based on survey

This survey has been connected to permanent marks no(s). 2,38 & 135 in Proclaimed Survey Area no. 45

Easement Information

Legend: A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/ In Favour Of
E-1	DRAINAGE	4·02	CROWN GRANT VOL.6489 FOL.783	ADJOINING & ADJACENT LAND, AUTHORISED AUTHORITIES SEE CROWN GRANT Vol.6489 Fol.783
E-2	PIPELINE AND CHANNEL	10·00	THIS PLAN IN ACCORDANCE WITH SECTION 258BA OF THE M.M.B.W. ACT	MELBOURNE WATER CORPORATION

LTO use only

Statement of Compliance/ Exemption Statement Received ☑

Date: 9/7/93

LTO use only

PLAN REGISTERED

TIME 11·25

DATE 22/7/93

Assistant Registrar of Titles

Sheet 1 of 2 Sheets

HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

LICENSED SURVEYOR JOHN ACTON DAWSON
SIGNATURE ..... DATE 7-4-93
REF. 5333 VERSION 2
Checked by BCH Date 7/4/93 Initialed .....

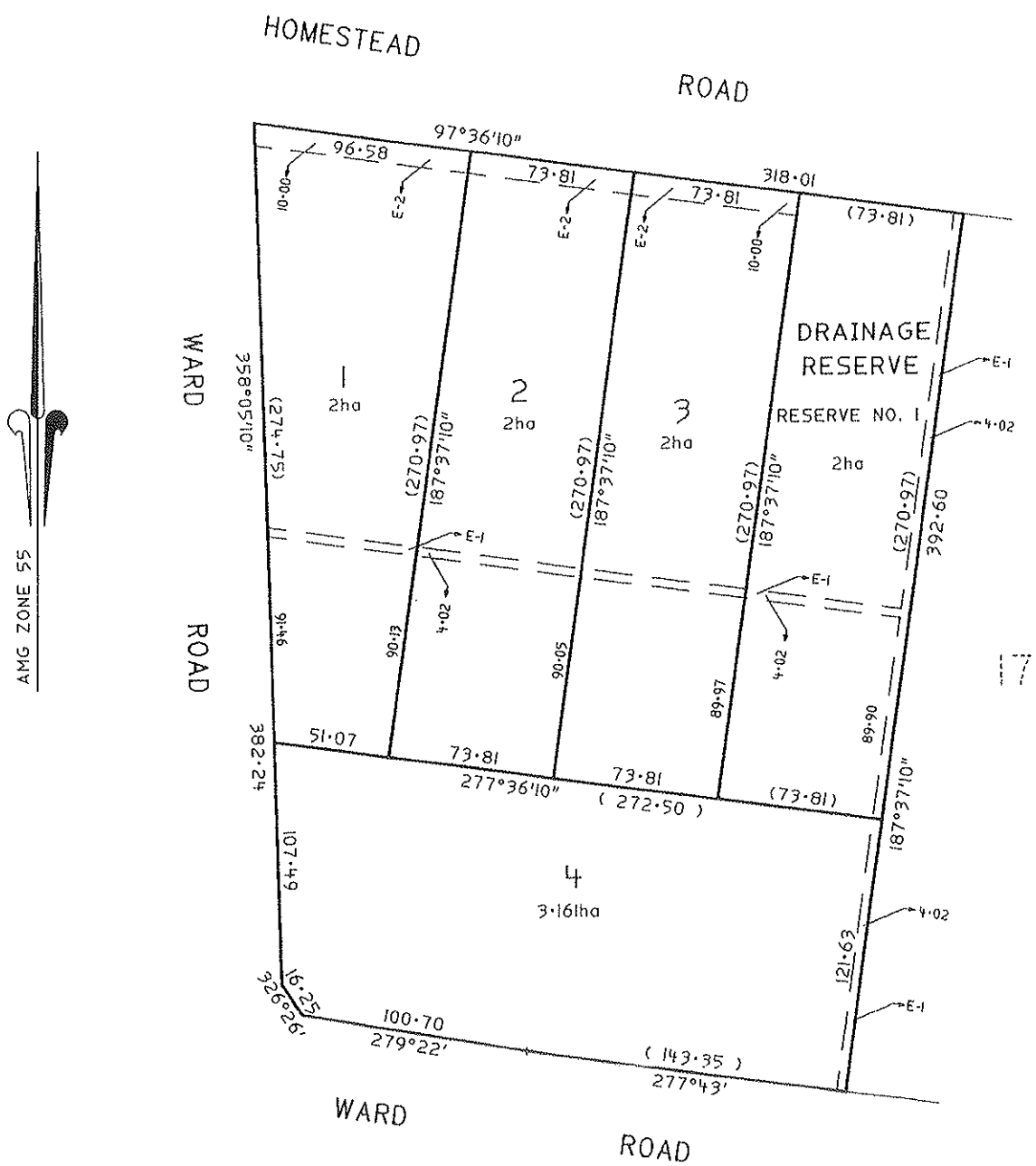
Date 30-4-93
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

PLAN OF SUBDIVISION

Stage No. /

Plan Number PS 323945M



HILL & DAWSON
LAND SURVEYORS & TOWN PLANNERS
7 LLEWELLYN PLACE EUMEMMERRING 3177
TEL 7948544 FAX 7934130 DX 17574

ORIGINAL SHEET SIZE A3 | SCALE 1:2000 | SCALE 40 0 40 80 LENGTHS ARE IN METRES

LICENSED SURVEYOR JOHN ACTON DAWSON

SIGNATURE ..... DATE 7-4-93

REF. 5333 VERSION 2

Checked by BGH Date 7/4/93 Initialed .....

Sheet 2 of 2 Sheets

Date 30-4-93

COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 mm

Appendix D

Groundwater Database Search

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PARISH NO	PARISH NAME	SITE NO	OLD SITE NO	RIG NO./ LIC NO.	MGA ZONE	EAST	NORTH	DATE COMPLETED	TOTAL DEPTH (m)	RLNS	SITE TYPE	USES	DRILL METHOD	LOGS G	LOGS D	AQUIF FROM (m)	AQUIF TO (m)	TSS mg/L
2131	BERWICK	301799	3213100073	NONE	55	351633.2	5788054.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	49733	3213110026	32029	55	353963.2	5785234.1	03.05.1988	61.5		BOR	ST	CBT	N	Y	0	0	TDS
2131	BERWICK	49735	3213115002	35322	55	351913.2	5785084.1	16.02.1990	35.6		BOR	NKN	DHH	N	Y			N/A
2131	BERWICK	49736	3213115003	35322	55	351913.2	5785924.1	22.02.1990	42.6		BOR	IR	DHH	N	Y			N/A
2131	BERWICK	301801	3213100075	NONE	55	353103.2	5788024.1	17.05.1974	7.01		BOR	NG		N	N			N/A
2131	BERWICK	301764	3213100038	NONE	55	351493.2	5786124.1	10.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301765	3213100039	NONE	55	351783.2	5785704.1	10.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301766	3213100040	NONE	55	351853.2	5786614.1	10.05.1974	2.44		BOR	NG		N	N			N/A
2131	BERWICK	301767	3213100041	NONE	55	352333.2	5786534.1	10.05.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	301768	3213100042	NONE	55	353513.2	5786344.1	10.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301769	3213100043	NONE	55	354133.2	5786254.1	10.05.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	301770	3213100044	NONE	55	354113.2	5785904.1	10.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301781	3213100055	NONE	55	354213.2	5786684.1	11.05.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	301782	3213100056	NONE	55	353633.2	5786824.1	11.05.1974	2.44		BOR	NG		N	N			N/A
2131	BERWICK	301783	3213100057	NONE	55	352993.2	5786884.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301784	3213100058	NONE	55	354293.2	5787304.1	11.05.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	301785	3213100059	NONE	55	353673.2	5787314.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301786	3213100060	NONE	55	353313.2	5787404.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301787	3213100061	NONE	55	352673.2	5787484.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301788	3213100062	NONE	55	352183.2	5787324.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301789	3213100063	NONE	55	352083.2	5787014.1	11.05.1974	7.01		BOR	NG		N	N			N/A
2131	BERWICK	301790	3213100064	NONE	55	351673.2	5787444.1	11.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	49727	3213110020	18652	55	353953.2	5785264.1	31.12.1983	28.6		BOR	ST DM	CBT	N	Y			N/A
2131	BERWICK	301800	3213100074	NONE	55	352483.2	5787984.1	17.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301862	3213100147	NONE	55	353693.2	5787324.1	10.01.1975	7.32		BOR	NG		N	N			N/A
2131	BERWICK	301802	3213100076	NONE	55	353533.2	5787964.1	17.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301803	3213100077	NONE	55	354373.2	5787874.1	17.05.1974	2.44		BOR	NG		N	N			N/A
2131	BERWICK	301804	3213100078	NONE	55	354473.2	5788104.1	17.05.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	301805	3213100079	NONE	55	354513.2	5788404.1	17.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301812	3213100086	NONE	55	354573.2	5788784.1	24.05.1974	3.96		BOR	NG		N	N			N/A
2131	BERWICK	301851	3213100131	NONE	55	352163.2	5785184.1	05.07.1974	3.96		BOR	NG		N	N	0	0	TSS
2131	BERWICK	301853	3213100134	NONE	55	351413.2	5786624.1	20.12.1974	12.8		BOR	NG		N	N			N/A
2131	BERWICK	301857	3213100141	NONE	55	353983.2	5787944.1	20.12.1974	6.1		BOR	NG		N	N			N/A
2131	BERWICK	301858	3213100142	NONE	55	354313.2	5787884.1	20.12.1974	5.49		BOR	NG		N	N			N/A
2131	BERWICK	S9022553/3		S9022553	55	353989.2	5785464.1		15		BOR	DW		N	N			N/A
2131	BERWICK	301863	3213100148	NONE	55	353693.2	5787324.1	10.01.1975	7.92		BOR	NG		N	N			N/A
2131	BERWICK	301865	3213100151	NONE	55	354553.2	5788804.1	10.01.1975	12.8		BOR	NG		N	N			N/A
2131	BERWICK	S9022553/1		S9022553	55	354002.2	5785562.1		15		BOR	DW		N	N			N/A
2131	BERWICK	S9022553/2		S9022553	55	353941.2	5785497.1		15		BOR	DW		N	N			N/A
2131	BERWICK	S9035957/1		S9035957	55	353264	5787359		150		BOR			N	N			N/A
2131	BERWICK	S9037684/1		S9037684	55	354119	5785203		50		BOR			N	N			N/A
2131	BERWICK	S9038474/1		S9038474	55	353142	5789336	02.07.2009	95		BOR		DHH	N	Y			N/A
3479	SEACOMBE	90704	3347915040	34972	55	351773.2	5789164.1	20.10.1989	2.9		BOR	DM	AGH	N	Y			N/A
3741	WARINA	S9038696/1		S9038696	55	354551	5787142		150		BOR			N	N			N/A

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Appendix E

Aerial Photographs

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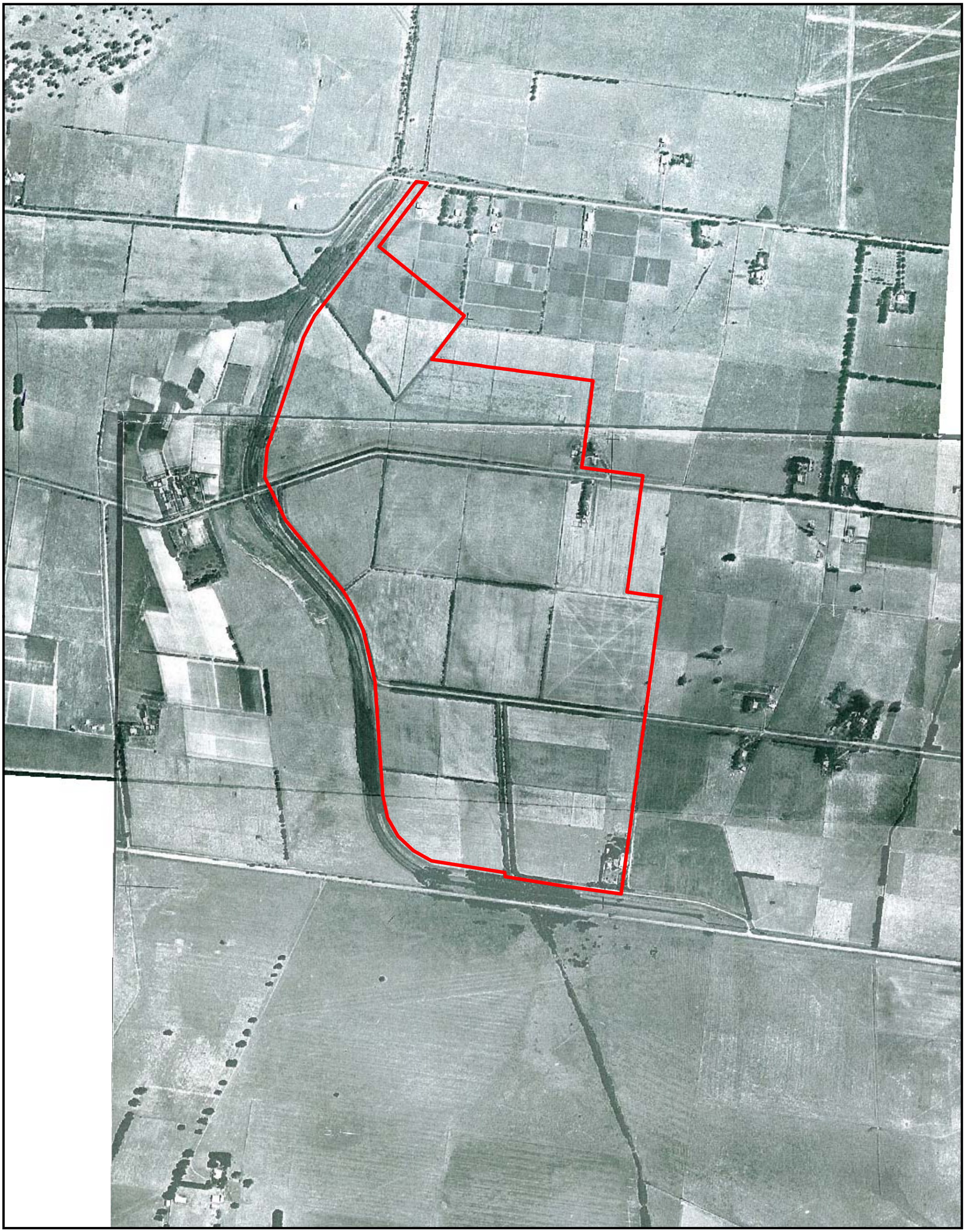

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N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 75 150 225 300

metres

1:8,000 when printed at A3

LEGEND

Site Boundary

HISTORICAL AERIAL PHOTOGRAPH 1960

Growth Areas Authority

Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

PROJECT ID	60156173
CREATED BY	DJB
LAST MODIFIED	DJB 27 Jul 2010

Appendix

E1

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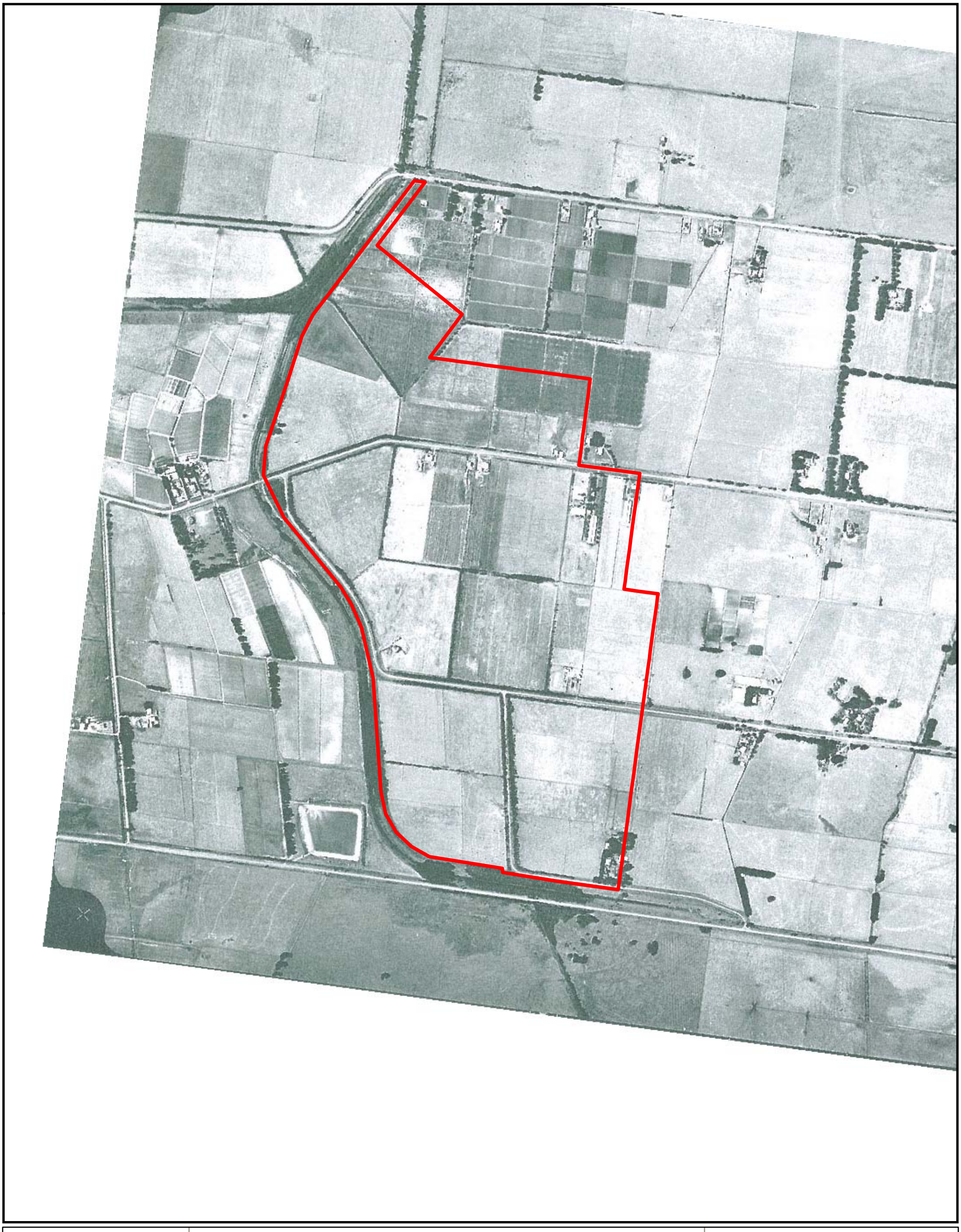

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metres

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LEGEND

Site Boundary

HISTORICAL AERIAL PHOTOGRAPH 1968

Growth Areas Authority

Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

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Appendix

E2

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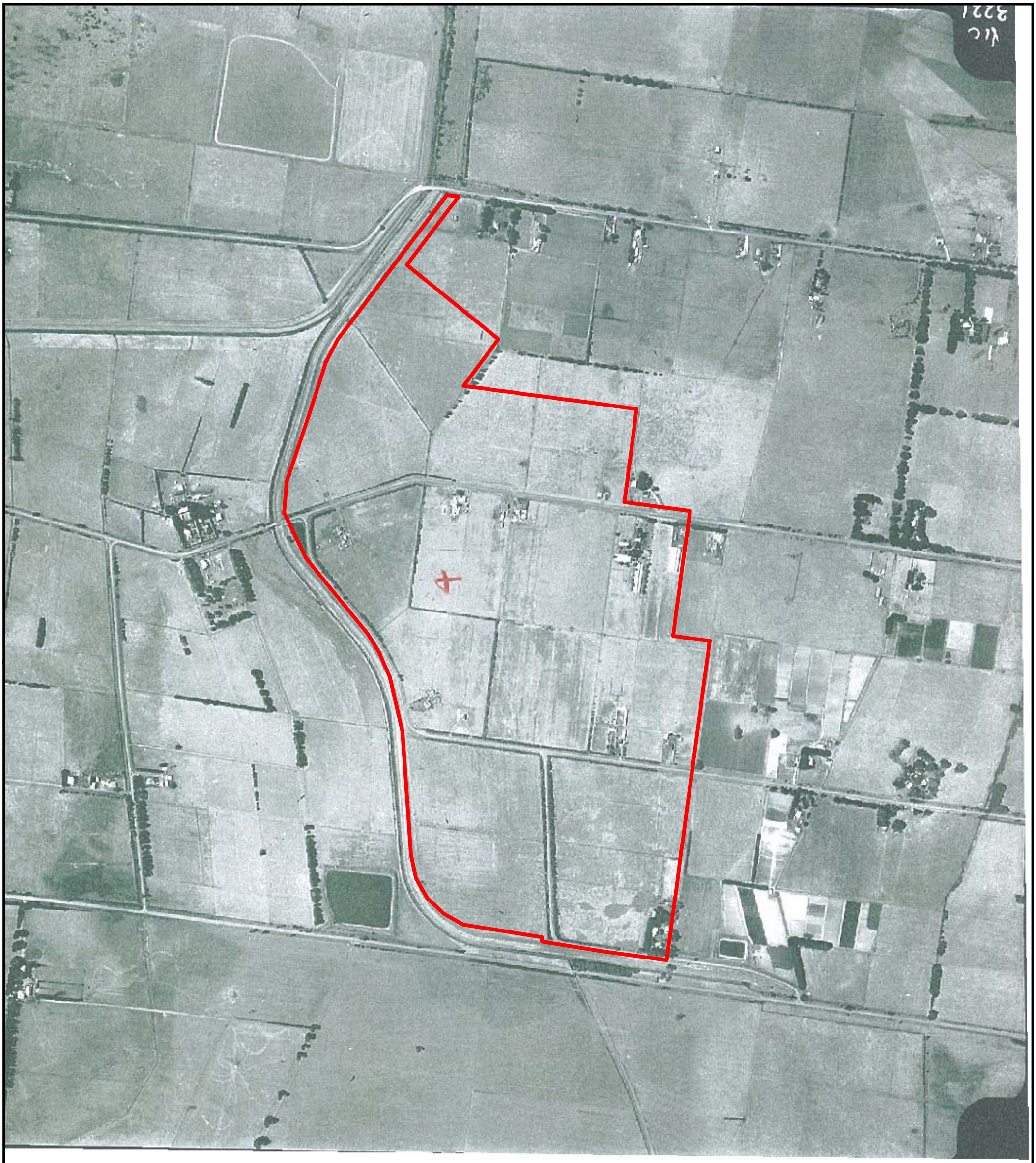

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metres

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LEGEND

Site Boundary

HISTORICAL AERIAL PHOTOGRAPH 1978

Growth Areas Authority

Preliminary Desktop Review and Targeted Environmental Soil Assessment

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E3

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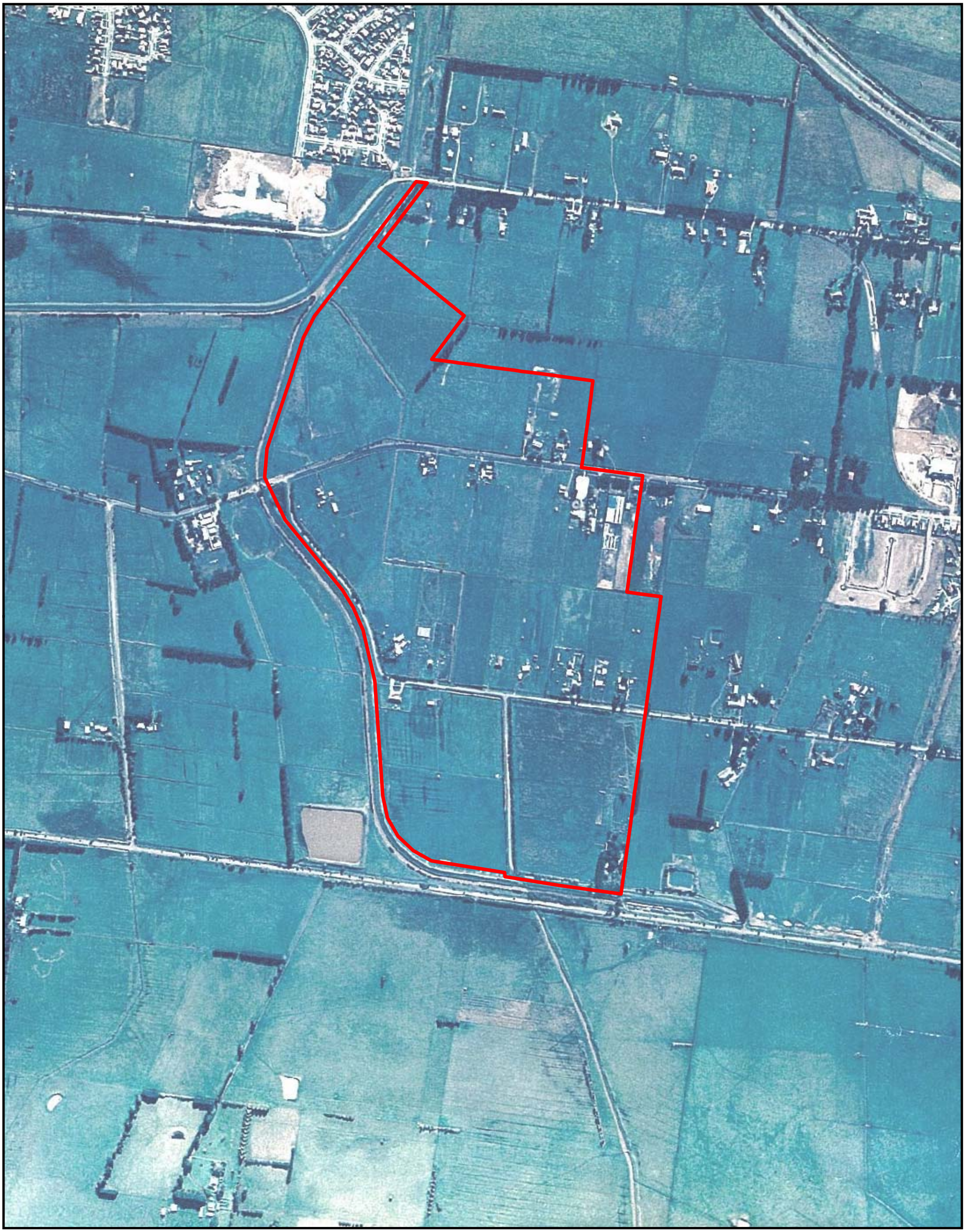

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DATUM GDA 1994, PROJECTION MGA ZONE 55

0 75 150 225 300

metres

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LEGEND

Site Boundary

HISTORICAL AERIAL PHOTOGRAPH 1991

Growth Areas Authority

Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

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Appendix

E4

Map Document: (G:\GISMEL\60156173_GAA_Berwick\01\ArcGIS\60156173_FigFX_HistoricalAerial_1991_17May10.mxd)

A3 size

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DATUM GDA 1994, PROJECTION MGA ZONE 55

0 70 140 210 280

metres

1:7,000 when printed at A3

LEGEND

Site Boundary

Data sources:
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HISTORICAL AERIAL PHOTOGRAPH 2006

Growth Areas Authority

Preliminary Desktop Review and Targeted Environmental Soil Assessment

PRP No.09 - Berwick Waterways, Berwick, Vic

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Appendix

E5

Appendix F

Priority Sites Register

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Priority Sites Register

Date Generated 01/03/2010

BACKGROUND

EPA has a key responsibility in protecting beneficial uses of land. Many of these uses are regulated or controlled through a range of measures to prevent contamination of land and groundwater. Land contaminated by former waste disposal, industrial and similar activities is frequently discovered during changes to land use - for example, from industrial to residential use. In most cases these can be managed at the time that the change of land use occurs. Some sites however, present a potential risk to human health or to the environment and must be dealt with as a priority. Such sites are typically subject to clean-up and/or management under EPA directions.

WHAT ARE PRIORITY SITES?

Priority Sites are sites for which EPA has issued a Clean-up Notice pursuant to section 62A, or a Pollution Abatement Notice pursuant to section 31A or 31B (relevant to land and/or groundwater) of the Environment Protection Act 1970. Typically these are sites where pollution of land and/or groundwater presents a potential risk to human health or to the environment. The condition of these sites is not compatible with the current or approved use of the site without active management to reduce the risk to human health and the environment. Such management can include clean-up, monitoring and/or institutional controls.

The Priority Sites Register does not list sites managed by voluntary agreements or sites subject to management by planning controls (eg. sites managed in accordance with a section 173 agreement under the Planning and Environment Act 1987). Land purchasers should be aware of these limitations and make their own enquiries. A site is listed on the Priority Sites Register when EPA issues a Clean-up Notice or a Pollution Abatement Notice (relevant to land and/or groundwater). A notice is a means by which EPA formalises requirements to manage pollution. Sites are removed from the Priority Sites Register once all conditions of a Notice have been complied with. This is formalised through a Notice of Revocation pursuant to section 60B of the Act.

FURTHER INFORMATION

Additional information is available from:
EPA Information Centre
200 Victoria Street
Carlton VIC 3053
Tel: 03 9695 2722 Fax: 03 9695 2610
Media Enquiries: 03 9695 2704
EPA internet site: www.epa.vic.gov.au

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Ararat Rural City Council	ARARAT	26 GRANO ST	Former Industrial Site. Requires assessment and/or clean up.
Ararat Rural City Council	ARARAT	MCLELLAN ST	Railway yard. Requires assessment and/or clean up.
Ballarat City Council	BALLARAT	1003 HUMFFRAY ST SOUTH	Former Industrial Site. Requires assessment and/or clean up.
Ballarat City Council	BALLARAT	BALLARAT AERODROME VOLUME 6747 FOLIO 250	Current Industrial Site. Requires assessment and/or clean up.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Ballarat City Council	BALLARAT	CANADIAN GULLY RESERVE, GEELONG RD	Historical deposit of mine tailings. Requires assessment and/or clean up.
Ballarat City Council	BROWN HILL	8 DITCHFIELD RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up.
Ballarat City Council	DELACOMBE	1201-1209 LATROBE ST & 4 HEINZ RD	Current Industrial Site. Requires assessment and/or clean up.
Ballarat City Council	MOUNT CLEAR	WHITEHORSE RD	Former Landfill. Requires on-going management.
Ballarat City Council	WARRENHEIP	LOT 2 SUBDIVISION PLAN PS434445P, BALLARAT-BURRUMBEET RD	Accidental spill/leak (non-industrial site). Requires assessment and/or clean up.
Banyule City Council	ST HELENA	1 EVELYN WAY	Former Landfill. Requires assessment and/or clean up.
Banyule City Council	ST HELENA	1 EVELYN WAY	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Bayside City Council	BRIGHTON	316-322 NEW ST	Former Service Station. Requires assessment and/or clean up.
Bayside City Council	BRIGHTON	601 HAMPTON ST	Current Service Station. Requires on-going management.
Bayside City Council	CHELTENHAM	18 HAMLET ST	Current Industrial Site. Requires on-going management.
Bayside City Council	HEATHERTON	OLD DANDENONG RD ELDER ST SOUTH	Illegal dumping. Requires assessment and/or clean up.
Benalla Rural City Council	TARNOOK	LOT 2 LP134138 BASIN RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Brimbank City Council	BROOKLYN	40-60 MCDONALD RD	Former Landfill. Requires on-going management.
Brimbank City Council	BROOKLYN	594 GEELONG RD (CORNER MCDONALD RD)	Former Landfill. Requires on-going management.
Brimbank City Council	BROOKLYN	69 BUNTING RD	Illegal dumping. Requires assessment and/or clean up.
Brimbank City Council	BROOKLYN	BUNTING RD	Former Landfill. Requires on-going management.
Brimbank City Council	DEER PARK	GATE 6 TILBURN RD	Current Industrial Site. Requires assessment and/or clean up.
Brimbank City Council	KEILOR DOWNS	GREEN GULLY RD	Former Landfill. Requires on-going management.
Brimbank City Council	SUNSHINE	23 CENTRAL AV	Current Industrial Site. Requires assessment and/or clean up.
Brimbank City Council	SUNSHINE	47 MCINTYRE RD	Former Industrial Site. Requires on-going management.
Brimbank City Council	SUNSHINE NORTH	DUKE ST	Waste Acid Sulfate Soils. Requires on-going management.
Brimbank City Council	SYDENHAM	FORMER SYDENHAM QUARRY, SYDENHAM RD	Former Landfill. Requires assessment and/or clean up.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Campaspe Shire Council	BAMAWM	LOT 2 PLAN OF SUBDIVISION 544316M PARISH OF TORRUMBURRY MITIAMO-ECHUCA RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Campaspe Shire Council	ECHUCA	ECHUCA LANDFILL ECHUCA-KYABRAM RD	Former Landfill. Requires on-going management.
Campaspe Shire Council	KYABRAM	GRAHAM RD	Former Landfill. Requires on-going management.
Cardinia Shire Council	NAR NAR GOON	FIVE MILE RD	Former Landfill. Requires on-going management.
Casey City Council	CRANBOURNE	LOT 7, 9, 10, 11 & 12 STEVENSONS RD	Former Landfill. Requires on-going management.
Casey City Council	NARRE WARREN NORTH	QUARRY RD	Former Landfill. Requires on-going management.
Central Goldfields Shire Council	CARISBROOK	POTTS LA	Former Landfill. Requires on-going management.
Colac-Otway Shire Council	COLAC	BRUCE ST	Former Landfill. Requires on-going management.
Colac-Otway Shire Council	MARENGO	ROBERTS RD	Former Landfill. Requires on-going management.
Corangamite Shire Council	GLENORMISTON	TERANG-MORTLAKE RD	Former Landfill. Requires on-going management.
Corangamite Shire Council	NOORAT	137 GLENORMISTON RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Corangamite Shire Council	TIMBOON	77 BARRETT ST	Former Service Station. Requires assessment and/or clean up.
Darebin City Council	NORTHCOTE	CLIFTON ST WALES ST	Former Landfill. Requires on-going management.
Darebin City Council	PRESTON	140 HIGH ST	Former Industrial Site. Requires assessment and/or clean up.
Darebin City Council	PRESTON	194-202 BELL ST	Former Industrial Site. Requires assessment and/or clean up.
Darebin City Council	PRESTON	3 NEWMAN ST	Former Industrial Site. Requires assessment and/or clean up.
Darebin City Council	PRESTON	62 ALBERT ST	Current Industrial Site. Requires on-going management.
Darebin City Council	PRESTON	67-79 HIGH ST	Current Service Station. Requires assessment and/or clean up.
Darebin City Council	RESERVOIR	LOT 87 NEWLANDS RD	Former Landfill. Requires on-going management.
East Gippsland Shire Council	BAIRNSDALE	201 MAIN ST	Former Service Station. Requires assessment and/or clean up.
East Gippsland Shire Council	BAIRNSDALE	201-205 MAIN ST	Former Service Station. Requires assessment and/or clean up.
East Gippsland Shire Council	BAIRNSDALE	205 MAIN ST	Former Service Station. Requires assessment and/or clean up.
East Gippsland Shire Council	ORBOST	44-50 SALSIBURY ST	Former Service Station. Requires assessment and/or clean up.
Frankston City Council	FRANKSTON	3 ROSELLA ST	Former Industrial Site. Requires assessment and/or clean up.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Frankston City Council	FRANKSTON NORTH	PARISH OF FRANKSTON C/ A 33C	Former Landfill. Requires on-going management.
Glen Eira City Council	CAULFIELD SOUTH	371 HAWTHORN RD	Former Service Station. Requires assessment and/or clean up.
Glen Eira City Council	CAULFIELD SOUTH	818 GLEN HUNTLY RD	Former Service Station. Requires assessment and/or clean up.
Golden Plains Shire Council	HADDON	214 KENNEDYS RD	Illegal dumping. Requires assessment and/or clean up.
Greater Bendigo City Council	BENDIGO	BENDIGO MARKETPLACE CROWN ALLOTMENT 14 SECTION 125C PARISH OF SANDHURST	Former Industrial Site. Requires assessment and/or clean up.
Greater Bendigo City Council	BENDIGO	CALTEX DEPOT 45 SANDHURST RD	Current Service Station. Requires assessment and/or clean up.
Greater Bendigo City Council	LOCKWOOD	74 HAZELDENES RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Greater Dandenong City Council	DANDENONG	163 HAMMOND RD	Former Industrial Site. Requires assessment and/or clean up.
Greater Dandenong City Council	DANDENONG	230-232 FRANKSTON-DANDENONG RD	Current Service Station. Requires assessment and/or clean up.
Greater Dandenong City Council	DANDENONG	GREENS RD	Former Industrial Site. Requires assessment and/or clean up.
Greater Dandenong City Council	DANDENONG SOUTH	20 CAHILL ST	Current Industrial Site. Requires assessment and/or clean up.
Greater Dandenong City Council	DANDENONG SOUTH	20-24 CAHILL ST	Current Industrial Site. Requires on-going management.
Greater Dandenong City Council	KEYSBOROUGH	33 FIVEWAYS BVD	Current Industrial Site. Requires assessment and/or clean up.
Greater Dandenong City Council	LYNDHURST	125 COLEMANS RD	Former Landfill. Requires assessment and/or clean up.
Greater Dandenong City Council	SPRINGVALE	310A SPRINGVALE RD	Former Service Station. Requires on-going management.
Greater Dandenong City Council	SPRINGVALE	917 PRINCES HWY	Former Industrial Site. Requires assessment and/or clean up.
Greater Dandenong City Council	SPRINGVALE SOUTH	CLARKE RD	Former Landfill. Requires on-going management.
Greater Dandenong City Council	SPRINGVALE SOUTH	FORMER SPRING VALLEY LANDFILL EASTERN SIDE OF CLARKE RD	Former Landfill. Requires on-going management.
Greater Geelong City Council	CORIO	BP DEPOT, SOUTH EAST OF HARPUR RD PRINCES HWY	Former Service Station. Requires assessment and/or clean up.
Greater Geelong City Council	CORIO	CALTEX DEPOT, NORTH EAST OF PRINCES HWY HARPUR RD	Former Service Station. Requires assessment and/or clean up.
Greater Geelong City Council	CORIO	SHELL REFINERY REFINERY RD	Current Industrial Site. Requires assessment and/or clean up.
Greater Geelong City Council	DRYSDALE	97 HIGH ST	Current Service Station. Requires on-going management.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Greater Geelong City Council	GEELONG EAST	GEELONG GUN CLUB, EASTERN BOTANICAL GARDENS	Gun, pistol or rifle range. Requires assessment and/or clean up.
Greater Geelong City Council	GEELONG NORTH	1-39 ROSENEATH ST	Current Industrial Site. Requires assessment and/or clean up.
Greater Geelong City Council	HIGHTON	18 NORTH VALLEY RD	Current Industrial Site. Requires assessment and/or clean up.
Greater Geelong City Council	LARA	PRINCES HWY (12 KILOMETRE & 15 KILOMETRE MARK)	Accidental spill/leak (non-industrial site). Requires assessment and/or clean up.
Greater Geelong City Council	MANIFOLD HEIGHTS	35-37 SHANNON AV	Current Service Station. Requires assessment and/or clean up.
Greater Geelong City Council	MOOLAP	132-160 POINT HENRY RD	Current Industrial Site. Requires assessment and/or clean up.
Greater Shepparton City Council	COSGROVE	LOT 1 PLAN OF SUBDIVISION 404181S	Former Landfill. Requires on-going management.
Greater Shepparton City Council	PINE LODGE SOUTH	205 QUARRY RD	Former Industrial Site. Requires assessment and/or clean up.
Greater Shepparton City Council	PINE LODGE SOUTH	205 QUARRY RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Greater Shepparton City Council	SHEPPARTON	LOT 2 DALDY RD	Former Industrial Site. Requires on-going management.
Greater Shepparton City Council	SHEPPARTON NORTH	44 WANGANUI RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up.
Hepburn Shire Council	CRESWICK	20 CLUNES RD	Current Service Station. Requires on-going management.
Hepburn Shire Council	CRESWICK	OFF LUTTET ST CRESWICK C/A 45A PARISH OF CRESWICK COUNTY OF TALBOT	Former Landfill. Requires on-going management.
Hepburn Shire Council	SAILORS FALLS	2453 BALLAN-DAYLESFORD RD	Accidental spill/leak (non-industrial site). Requires on-going management.
Hindmarsh Shire Council	DIMBOOLA	C/A 15 32 & 32A PARISH OF WATCHEGATCHECA SALLMANS RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Hindmarsh Shire Council	DIMBOOLA	LLOYD ST	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Hobsons Bay City Council	ALTONA	401 KOROROIT CREEK RD	Current chemical storage facilty. Requires assessment and/or clean up.
Hobsons Bay City Council	ALTONA	541-583 KOROROIT CREEK RD	Current chemical storage facilty. Requires assessment and/or clean up.
Hobsons Bay City Council	ALTONA	ELFIELD MEADOWS ESTATE DEFINED BY VOLUME 10426 FOLIO 035 & VOLUME 10369 FOLIO 278	Waste Acid Sulfate Soils. Requires on-going management.
Hobsons Bay City Council	ALTONA	FORMER ALTONA LANDFILL, QUEEN ST	Former Landfill. Requires on-going management.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Hobsons Bay City Council	ALTONA	MCARTHURS RD	Former Landfill. Requires on-going management.
Hobsons Bay City Council	ALTONA	MILLERS RD KOROROIT CREEK RD	Current chemical storage facilty. Requires assessment and/or clean up.
Hobsons Bay City Council	ALTONA NORTH	KYLE RD	Former Landfill. Requires on-going management.
Hobsons Bay City Council	NEWPORT	411 DOUGLAS PDE	Current petroleum storage site. Requires assessment and/or clean up.
Hobsons Bay City Council	NEWPORT	SHELL, BURLEIGH ST	Current petroleum storage site. Requires assessment and/or clean up.
Hobsons Bay City Council	NEWPORT	UNDERGROUND SECTION OF PETROLEUM PIPELINES THAT RUN UNDER CHAMPION RD	Current Industrial Site. Requires assessment and/or clean up.
Hobsons Bay City Council	SOUTH KINGSVILLE	22 NEW ST	Former Landfill. Requires assessment and/or clean up.
Hobsons Bay City Council	SPOTSWOOD	18-24 DRAKE ST	Current petroleum storage site. Requires assessment and/or clean up.
Hobsons Bay City Council	SPOTSWOOD	21-31 BURLEIGH ST	Current Industrial Site. Requires assessment and/or clean up.
Hobsons Bay City Council	SPOTSWOOD	SPOTSWOOD DEPOT 512-578 MELBOURNE RD	Railway yard. Requires assessment and/or clean up.
Hobsons Bay City Council	YARRAVILLE	YARRAVILLE TERMINAL FRANCIS ST	Current petroleum storage site. Requires assessment and/or clean up.
Hume City Council	BULLA	570 WILDWOOD RD	Solid inert waste has been dumped at the site. Requires on-going management.
Hume City Council	CAMPBELLFIELD	1735 SYDNEY RD	Current Industrial Site. Requires assessment and/or clean up.
Hume City Council	CAMPBELLFIELD	MAHONEYS RD	Former Landfill. Requires on-going management.
Hume City Council	CRAIGIEBURN	9/11 TECHNICAL DR	Current Industrial Site. Requires assessment and/or clean up.
Hume City Council	CRAIGIEBURN	FORMER CRAIGIEBURN RD LANDFILL	Former Landfill. Requires on-going management.
Hume City Council	GREENVALE	WOODLANDS HISTORIC PARK	Illegal dumping. Requires on-going management.
Hume City Council	SOMERTON	CLIFFORDS RD	Current Industrial Site. Requires on-going management.
Hume City Council	TULLAMARINE	WESTERN AV	Former Landfill. Requires on-going management.
Kingston City Council	CHELSEA	476-482 NEPEAN HWY	Former Service Station. Requires assessment and/or clean up.
Kingston City Council	CHELSEA	FORMER CHELSEA LANDFILL MULKARRA DR	Former Landfill. Requires on-going management.
Kingston City Council	CHELSEA	SCOTCH PDE	Former Landfill. Requires on-going management.
Kingston City Council	CLAYTON SOUTH	CLAYTON RD RYANS RD	Former Landfill. Requires on-going management.
Kingston City Council	CLAYTON SOUTH	LOT 8 ELDER ST	Former Landfill. Requires on-going management.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Kingston City Council	CLAYTON SOUTH	RYANS RD	Former Landfill. Requires on-going management.
Kingston City Council	MORDIALLOC	78-86 WHITE ST	Former Industrial Site. Requires assessment and/or clean up.
Knox City Council	BAYSWATER	489 MOUNTAIN HWY	Current Industrial Site. Requires assessment and/or clean up.
Knox City Council	WANTIRNA SOUTH	LLEWELLYN PARK CATHIES LA WEST OF HELPMANN ST	Former Landfill. Requires on-going management.
Latrobe City Council	MORWELL	TRARALGON WEST RD	Current Industrial Site. Requires on-going management.
Latrobe City Council	TRARALGON	14-16 QUEENS PDE	Current Industrial Site. Requires assessment and/or clean up.
Latrobe City Council	TRARALGON	LOY YANG B 3/4 BENCH BARTONS LA	Ash pond with a Groundwater Attenuation Zone. Requires on-going management.
Latrobe City Council	TRARALGON	LOY YANG SWITCHYARD BARTONS LA	Ash pond with a Groundwater Attenuation Zone. Requires on-going management.
Loddon Shire Council	PYRAMID HILL	C/A 1C SECTION A PARISH OF TERRICK TERRICK WEST	Current Landfill. Requires on-going management.
Macedon Ranges Shire Council	BULLENGAROOK	HOBBS RD	Former Landfill. Requires on-going management.
Macedon Ranges Shire Council	KYNETON	25 WARDS LA	Illegal dumping. Requires assessment and/or clean up.
Macedon Ranges Shire Council	KYNETON	REDESDALE RD	Former Landfill. Requires on-going management.
Macedon Ranges Shire Council	PIPERS CREEK	232 NORTHUMBERLAND RD	Illegal dumping. Requires assessment and/or clean up.
Macedon Ranges Shire Council	WOODEND NORTH	ALLOTMENT N1 SEC 66 PARISH OF WOODEND 10 LODGE WOOD RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Maribyrnong City Council	BROOKLYN	FORMER JAMES HARDIE LANDFILL, HARDIE RD	Former Landfill. Requires on-going management.
Maribyrnong City Council	YARRAVILLE	1-3 HIGH ST	Former Industrial Site. Requires on-going management.
Maribyrnong City Council	YARRAVILLE	221A & 221B WHITEHALL ST	Former Industrial Site. Requires on-going management.
Maribyrnong City Council	YARRAVILLE	281-295 WHITEHALL ST	Former Industrial Site. Requires assessment and/or clean up.
Maribyrnong City Council	YARRAVILLE	281-295 WHITEHALL ST	Former Industrial Site. Requires on-going management.
Maribyrnong City Council	YARRAVILLE	295 WHITEHALL ST	Current Industrial Site. Requires assessment and/or clean up.
Maribyrnong City Council	ASCOT VALE	421 - 431 MT ALEXANDER RD	Former Service Station. Requires assessment and/or clean up.
Maribyrnong City Council	FOOTSCRAY	FARNSWORTH AV	Former Landfill. Requires on-going management.
Maribyrnong City Council	MAIDSTONE	9-15 WILLIAMSON RD	Former Industrial Site. Requires assessment and/or clean up.
Maribyrnong City Council	WEST FOOTSCRAY	SOMERVILLE RD	Current Industrial Site. Requires assessment and/or clean up.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Maroondah City Council	CROYDON	DORSET PUBLIC GOLF COURSE TRAWALLA RD	Former Landfill. Requires on-going management.
Maroondah City Council	CROYDON	MT DANDENONG RD ANZAC ST	Current Service Station. Requires on-going management.
Maroondah City Council	RINGWOOD	385-389 CANTERBURY RD	Current Service Station. Requires on-going management.
Maroondah City Council	RINGWOOD EAST	18 MOUNT DANDENONG RD	Current Service Station. Requires assessment and/or clean up.
Melton Shire Council	MELTON	FORMER MELTON SHIRE LANDFILL, FERRIS RD	Former Landfill. Requires on-going management.
Melton Shire Council	MOUNT COTTRELL	MT COTTRELL RESERVE 180 FAULKNERS RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up.
Melton Shire Council	RAVENHALL	53-61 REBECCA DR	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Melton Shire Council	RAVENHALL	53-61 REBECCA DR	Industrial waste has been dumped at the site. Requires on-going management.
Mildura Rural City Council	MILDURA	CALTEX DEPOT 42 NINTH ST	Current Service Station. Requires assessment and/or clean up.
Mildura Rural City Council	MILDURA	KOORLONG RD	Former Landfill. Requires on-going management.
Mitchell Shire Council	BROADFORD	HIGH ST	Former Landfill. Requires on-going management.
Mitchell Shire Council	NORTHWOOD	1630 NORTHWOOD RD	Solid inert waste has been dumped at the site. Requires assessment and/or clean up.
Mitchell Shire Council	SEYMOUR	117 WIMBLE ST	Current Industrial Site. Requires assessment and/or clean up.
Moira Shire Council	COBRAM	(LOT 2 PLAN 325598) 129 COBRAM-KOONOOMOO RD	Former Landfill. Requires on-going management.
Moira Shire Council	NUMURKAH	ALLOTMENT 1 SECTION 46 (RAILWAY PLACE)	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Moira Shire Council	NUMURKAH	PARISH OF KATUNGA C/A 14 SECT D NARING RD	Former Landfill. Requires on-going management.
Moira Shire Council	ST JAMES	LOT 4 OLIVERS RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Moira Shire Council	YARRAWONGA	81 CHANNEL RD	Former Landfill. Requires on-going management.
Monash City Council	CLAYTON	159 WELLINGTON RD	Current Industrial Site. Requires assessment and/or clean up.
Monash City Council	CLAYTON	72-74 HENDERSON RD	Former Industrial Site. Requires assessment and/or clean up.
Moorabool Shire Council	BACCHUS MARSH	EAST MADDINGLEY RD	Current Landfill. Requires on-going management.
Moorabool Shire Council	BACCHUS MARSH	END OF HALLETTS WAY	Industrial waste has been dumped at the site. Requires assessment and/or clean up.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Moorabool Shire Council	BALLAN	LOT 1 WESTERN HWY	Current Service Station. Requires assessment and/or clean up.
Moorabool Shire Council	MADDINGLEY	NORTH SIDE OF KERRS RD	Former Landfill. Requires on-going management.
Moorabool Shire Council	MORRISONS	225 DOLLYS CREEK RD	Illegal dumping. Requires assessment and/or clean up.
Moorabool Shire Council	MOUNT EGERTON	YENDON-EGERTON RD BALLAN-EGERTON RD	Former Landfill. Requires on-going management.
Moorabool Shire Council	ROWSLEY	C/A 5E SECTION 13 PARISH OFGORROCKBURKGAP COUNTYOF GRANT VOLUME 7283 FOLIO 402	Gun, pistol or rifle range. Requires on-going management.
Moreland City Council	BRUNSWICK	225 BARKLY ST	Former Industrial Site. Requires assessment and/or clean up.
Moreland City Council	BRUNSWICK	227 BARKLY ST	Former Industrial Site. Requires assessment and/or clean up.
Moreland City Council	COBURG NORTH	46 NEWLANDS RD	Current Service Station. Requires assessment and/or clean up.
Mornington Peninsula Shire Council	CRIB POINT	2 LENS ST	Former Landfill. Requires on-going management.
Mornington Peninsula Shire Council	CRIB POINT	THE ESPLANADE	Former Industrial Site. Requires on-going management.
Mornington Peninsula Shire Council	DROMANA	107 POINT NEPEAN RD	Current Service Station. Requires assessment and/or clean up.
Mornington Peninsula Shire Council	MOUNT ELIZA	254 & 450 MOOROODUC HWY	Former Landfill. Requires on-going management.
Mornington Peninsula Shire Council	ROSEBUD WEST	119 TRUEMANS RD	Former Landfill. Requires on-going management.
Mornington Peninsula Shire Council	RYE	POINT NEPEAN RD WEIR ST	Current Service Station. Requires on-going management.
Mount Alexander Shire Council	CASTLEMAINE	98 FOREST ST	Former Industrial Site. Requires assessment and/or clean up.
Mount Alexander Shire Council	CASTLEMAINE	LOT 1 3 4 6 & 7 TP680281 & ALLOTMENT 4 & 5 SEC D8 PARISH OF CASTLEMAINE	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Moyne Shire Council	PORT FAIRY	BADHAMS LA	Former Landfill. Requires on-going management.
Murrindindi Shire Council	GHIN GHIN	67 HOMEWOOD-GHIN GHIN RD (CROWN ALLOTMENT 167B PARISH OF YEA) & 6452 GOULBURN VALLEY HWY (LOT 2 ON PLAN OF SUBDIVISION 215820C)	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Nillumbik Shire Council	DIAMOND CREEK	50 FRASER ST	Former Industrial Site. Requires assessment and/or clean up.
Nillumbik Shire Council	KANGAROO GROUND	GRAHAM RD	Former Landfill. Requires on-going management.
Nillumbik Shire Council	PANTON HILL	165 MOTSCHALLS RD	Current Industrial Site. Requires on-going management.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Port Phillip City Council	SOUTH MELBOURNE	82 MONTAGUE ST	Former Industrial Site. Requires assessment and/or clean up.
South Gippsland Shire Council	FOSTER	SOUTH GIPPSLAND HWY	Former Landfill. Requires on-going management.
South Gippsland Shire Council	NYORA	540 YANNATHAN RD	Current Industrial Site. Requires assessment and/or clean up.
Strathbogie Shire Council	EUROA	2 CHARLES ST	Industrial waste has been dumped at the site. Requires on-going management.
Surf Coast Shire Council	WINCHELSEA	114 TREBECK CT	Illegal dumping. Requires assessment and/or clean up.
Swan Hill Rural City Council	SWAN HILL	3 HASTINGS ST	Current petroleum storage site. Requires assessment and/or clean up.
Swan Hill Rural City Council	SWAN HILL	HASTINGS ST NARETHA ST	Current petroleum storage site. Requires on-going management.
Towong Shire Council	BETHANGA	MARTINS RD	Former Landfill. Requires on-going management.
Wangaratta Rural City Council	WANGARATTA	29-35 ROWAN ST	Former Service Station. Requires assessment and/or clean up.
Wangaratta Rural City Council	WANGARATTA	LOT 2 PS544632B	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Warrnambool City Council	ALLANSFORD	137 ZIEGLER PDE	Contaminated soil is retained and managed on-site. Requires assessment and/or clean up.
Warrnambool City Council	WARRNAMBOOL	BRAITHWAITE ST	Former Landfill. Requires on-going management.
Warrnambool City Council	WARRNAMBOOL	SCOTT ST	Current Industrial Site. Requires on-going management.
Wellington Shire Council	MAFFRA	57 JOHNSON ST	Current Industrial Site. Requires assessment and/or clean up.
Wellington Shire Council	SALE	35 MCGHEE ST	Former Industrial Site. Requires assessment and/or clean up.
Wellington Shire Council	YARRAM	OFF YARRAM-TRARALGON RD	Former Landfill. Requires on-going management.
Whitehorse City Council	BLACKBURN	21 BLACKBURN RD	Current Service Station. Requires on-going management.
Whitehorse City Council	BLACKBURN	24 BLACKBURN RD	Current Service Station. Requires on-going management.
Whitehorse City Council	BOX HILL	14 FEDERATION ST	Former Landfill. Requires on-going management.
Whittlesea City Council	EPPING	500 COOPER ST	Former Landfill. Requires on-going management.
Whittlesea City Council	KEON PARK	6-8 DUNSTANS CT	Current Industrial Site. Requires on-going management.
Whittlesea City Council	THOMASTOWN	342 SETTLEMENT RD	Former Service Station. Requires assessment and/or clean up.
Wodonga Rural City Council	WODONGA	CASTLE CREEK RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Wodonga Rural City Council	WODONGA	QUEEN ST	Former Landfill. Requires on-going management.

MUNICIPALITY	LOCALITY	ADDRESS	ISSUE
Wyndham City Council	LAVERTON NORTH	LEAKES RD	Former Industrial Site. Requires assessment and/or clean up.
Wyndham City Council	TRUGANINA	99 PALMERS RD	Solid inert waste has been dumped at the site. Requires on-going management.
Yarra City Council	FITZROY NORTH	184-186 ST GEORGES RD	Former Service Station. Requires on-going management.
Yarra City Council	RICHMOND	1-21 KENT ST & 10-24 BUCKINGHAM ST	Former Industrial Site. Requires on-going management.
Yarra City Council	RICHMOND	3-21A KENT ST 1/4-14/4 LITTLE BUCKINGHAM ST & 8-28 BUCKINGHAM ST	Former Industrial Site. Requires on-going management.
Yarra Ranges Shire Council	BELGRAVE	2-6 MONBULK RD	Current Industrial Site. Requires assessment and/or clean up.
Yarra Ranges Shire Council	GRUYERE	108 KILLARA RD	Industrial waste has been dumped at the site. Requires assessment and/or clean up.
Yarra Ranges Shire Council	MONTROSE	LOT 3 FUSSELL RD	Current Industrial Site. Requires on-going management.
Yarriambiack Shire Council	WARRACKNABEAL	LOT 2 LP144393 & LOT 2 PS306973 GAULKES RD	Illegal dumping. Requires assessment and/or clean up.

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Appendix G

Site Photographs

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Plate 1: Lot 1 viewed from Lot 27

Plate 2: Lot 2 viewed from Lot 27. Small stockpile of basalt boulders in background

Plate 3: Lot 3 viewed from Lot 27 showing area of raised ground in background. Lot 28 (Melbourne Water drainage channel) in foreground

Plate 4: Lot 4 showing stockpiled hard rubbish and stockpiled soil

Plate 5: Lot 5 showing stockpiled soil at rear of property

Plate 6: TP07 (Lot 6)

Plate 7: Lot 6 - Open drainage channel

Plate 8: Lot 7 viewed from Lot 9

Plate 9: Lot 8

Plate 10: Lot 9

Plate 11: Lot 10 – car wreck and scrap metal

Plate 12: Lot 11 SP10

Plate 13: Lot 11 TP18

Plate 14: Lot 12

Plate 15: Lot 13

Plate 16: Lot 14 TP12

Plate 17: Lot 15 from Lot 14 showing pond

Plate 18: Lot 16 from Lot 9

Plate 19: Lot 17 showing corrugated iron at rear of property

Plate 20: Lot 19 (Alameda Homestead Nursery)

Plate 21: Stockpile with soil and waste including potential asbestos containing material at rear of Lot 20.

Plate 22: Vehicle storage on Lot 21

Plate 23: Lot 22

Plate 24: Lot 23 – Buddhist Temple

Plate 25: Lot 24

Plate 26: Lot 25

Plate 27: Lot 26

Plate 28: Lot SP01 on Lot 27 showing miscellaneous building rubble in background

Plate 29: SP02 on Lot 27

Plate 30: Lot 29 Melbourne Water Wetland and Retarding Basin

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Appendix H

Analytical Data Validation

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1.0 Appendix H - Data Validation

Specific elements relating to the validation of the soil sampling and analytical data that have been checked and assessed for this project include:

- Preservation and storage of samples upon collection and during transport to the laboratory in order to maintain sample integrity in accordance with Australian Standard AS4482.1- 2005, Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds (Standards Australia, 2005) and Victorian EPA Publication IWRG701 - "Sampling and analysis of waters, wastewaters, soil and waste".
- Samples analysed within holding times to maintain sample integrity in accordance with AS4482.1- 2005 (Standards Australia, 2005) and USEPA SW846 (1998).
- Use of appropriate analytical procedures in accordance with National Association of Testing Authorities Technical Note No. 23 (NATA, 2008).
- Required limits of reporting to be below applied guideline concentrations.
- Frequency of conducting quality control measurements as defined in AS4482.1-2005 (Standards Australia, 2005), National Environment Protection Measure (NEPM 1999) – "Guideline on data collection, sample design and reporting" and Victorian EPA Publication IWRG701.
- Checking of laboratory blank results to assess the potential for incidental or accidental contamination or analytical interference within the laboratory (AS4482.1-2005).
- Checking of field blanks such as rinsate and trip blanks to assess the potential for incidental or accidental sample contamination. Rinsate blank results are used to assess the decontamination procedure undertaken in the field, ensuring no measurement of incidental or accidental contamination between samples in the field. Trip blanks are used to assess the effect of external sources of volatile compounds on field samples.
- Matrix spike recovery results in order to assess the effects of the sample matrix on the precision and accuracy of the analyses. The desired matrix spike recovery range is 70% - 130%.
- Laboratory control sample (LCS) recovery results in order to assess analytical method precision and accuracy independent of sample matrix. Samples are a certified reference material or a known interference free matrix spiked with target analytes. Acceptance criteria for LCS recoveries are dynamic and specified by the laboratory based on statistical evaluation of historical LCS results.
- Surrogate spike results in order to assess the accuracy of organic analyses that involve chromatographic techniques. The desired surrogate recovery range is 70% - 130%.
- Intra laboratory duplicate results to assess the combined precision of sampling, sample preparation and analysis AS4482.1-2005 (Standards Australia, 2005).
- Comparison of field and inter-laboratory duplicate results with parent sample results to ensure that the relative percent difference is within acceptable ranges.
- The occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

Results of the above mentioned data validation checks are included in **Tables H1** to **H4**. The impact of any results reported outside adopted acceptability limits are discussed further below.

1.1 Laboratory QA/QC

1.1.1 Laboratory Control Sample recovery

LCS recovery for analysed chemicals were generally reported within the acceptable range of 70 % to 130% with the exception of the following:

- Pentachlorophenol (59% - 60%)
- 3&4-Methylphenol (m&p-Cresol) (66%)
- Phenol (61%)
- 2.4-Dichlorophenol (63%)
- 2.6-Dichlorophenol (64%)
- 2-Nitrophenol (60%)
- 2-Methylphenol (o-Cresol) (67%)
- 2-Chlorophenol (65%)

It should be noted that that phenolic compound results may be biased low. In general, the lower recoveries for these compounds are not considered to affect the interpretation of the data as phenols are not a primary contaminant of concern at the Site.

1.1.2 Laboratory duplicate RPDs

Laboratory duplicate RPDs were within the acceptable limits.

1.1.3 Laboratory matrix spike recoveries

Laboratory matrix spike recoveries were within the acceptable range of 70 % to 130% with the exception of Pentachlorophenol (56% - 61%) and 2.4-Dimethylphenol (51%). It should be noted that that phenolic compound results may be biased low. In general, the lower recoveries for these compounds are not considered to affect the interpretation of the data as phenols are not a primary contaminant of concern at the Site.

1.1.4 Laboratory controlled spikes

The laboratory controlled spikes recovery results were within the specific laboratory DQO range of 70 % to 130 % and 30-130% for phenols.

1.1.5 Laboratory surrogate spike recoveries

The surrogate spike recovery results generally ranged within the DQO range of 70 % to 130 % with the exception of Phenol-d6 (surr.) (20% - 26%). It should be noted that that phenolic compound results may be biased low, however phenols are not a primary contaminant of concern at the Site and therefore these exceedences are not expected to significantly impact on the interpretation of results.

1.2 AECOM QA/QC

1.2.1 Frequency of quality control measurements

AECOM collected field blanks at a frequency of one rinsate blank per day of groundwater sampling and in accordance with Australian Standard AS4482.1-2005.

AECOM collected three intralaboratory duplicate samples, three interlaboratory duplicate (triplicate) samples and 16 primary samples in accordance with Australian Standard AS4482.1-2005 of one per 20 primary samples for those samples submitted for analyses. Specifically, the triplicate sample was analysed for field acid sulphate soil screening (pH_F and pH_{FOX}) at a rate of one in eight primary samples and the chromium acid sulphate suite at a rate of one in three primary samples.

1.2.2 Blank samples

One rinsate blank was collect during the groundwater sampling. The sample returned results that were all below the laboratory limit of reporting.

1.2.3 Trip Blanks

No trip blanks were collected during this sampling program.

1.2.4 Duplicate and Triplicate samples

AECOM collected three intralaboratory duplicate samples and three interlaboratory duplicate (triplicate) samples (two for analysis for potential contaminants of concern, and one for acid sulphate soil testing) as part of this investigation. RPDs calculated comparing the concentrations reported in duplicate/triplicate samples with those reported in the corresponding primary samples are shown for soil and groundwater in **Table H3 and H4** respectively.

RPDs generally fell within the acceptable limits of 0 to 50% (where concentrations were greater than ten times the EQL), with the exception of one duplicate pair (out of 444 analysed). No RPD limit was applied for concentrations less than ten times the EQL. The RPD exceedances are likely due to the heterogeneity of the soil encountered during sampling. Where the RPD fell outside the acceptable limits, the higher concentration was adopted for interpretive use.

1.2.5 Occurrence of Anomalous Results

There was no occurrence of anomalous results.

1.3 Overall Assessment of Data Quality

On the basis of the analytical data validation procedure employed and interpretation provided above, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretative use.

Appendix I

Borelogs

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AECOM
Level 45, 80 Collins Street
MELBOURNE VIC 3004
Telephone: 03 9653 1234
Fax: 03 9654 7117

BORING/WELL CONSTRUCTION LOG

MW01

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
DRILLING METHOD Hand Auger to 1m, drill to end
SAMPLING METHOD Grab
SURFACE ELEVATION
WELL HEAD/TOC 18.942 mAHD
LOGGED BY J. Hume
COMMENTS

DATE 5/7/2010
BLANK 0.0m - 3.7m
SCREEN 3.7m - 9.7m
GRAVEL PACK 3.2m - 9.7m
SANITARY SEAL/BENTONITE 2.2m - 3.2m
STABILISED WATER LEVEL 1.38 mBTOC
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (mBGS)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
					0		TOPSOIL: Silt, dark brown/ grey, firm, moist, no odour.	0.20
							Increasing stiffness	
			MW01_ 1-1.05	✳	1		CLAY: mottled 60% grey, 20% orange/ brown, 20% dark brown/ grey, stiff, moist, no odour.	
			MW01_ 1.5-1.55	✳				
					2			
								2.50
					3		CLAY: light brown with grey lenses, stiff, moist, no odour.	
					4		Increasing moisture.	
					5			
					6			
					7			
					8		Wet.	
					9			
								9.70
							End soil bore @ 9.70 m Total Depth: 9.70 m	

WELL DIAGRAM

- Cement seal
- 50 mm uPVC BlankCasing
- Bentonite seal
- 0.8mm graded sand
- 50 mm uPVC Slotted Screen

BORING / WELL CONSTRUCTION LOG 60156173_BORELOGS_MW_28JUL10.GPJ HLA_SYD.GDT 28/7/10

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BORING/WELL CONSTRUCTION LOG

MW02

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
DRILLING METHOD Hand Auger to 1m, drill to end
SAMPLING METHOD Grab
SURFACE ELEVATION
WELL HEAD/TOC 19.753 mAHD
LOGGED BY J. Hume
COMMENTS

DATE 5/7/2010
BLANK 0.0m - 2.0m
SCREEN 2.0m - 6.04m
GRAVEL PACK 1.5m - 6.04m
SANITARY SEAL/BENTONITE 1.0m - 1.5m
STABILISED WATER LEVEL 1.23 mBTOC
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (mBGS)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
			MW02_1-1.05		1		TOPSOIL: Silt with clay, dark brown/ grey, firm, moist, no odour.	0.15	Cement seal
							Increasing stiffness.		
			MW02_1.5-1.55				CLAY: mottled orange/ brown, dark grey, grey, stiff, no odour.		50 mm uPVC BlankCasing
					2				Bentonite seal
					3		CLAY: light brown with grey lenses, stiff, moist, no odour.	3.00	
							Increasing moistness.		0.8mm graded sand
					4				50 mm uPVC Slotted Screen
					5		Wet.		
					6		End soil bore @ 6.04 m Total Depth: 6.04 m	6.04	

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BORING/WELL CONSTRUCTION LOG

MW03

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
DRILLING METHOD Hand Auger to 1m, drill to end
SAMPLING METHOD Grab
SURFACE ELEVATION
WELL HEAD/TOC 19.372 mAHD
LOGGED BY J. Hume
COMMENTS

DATE 5/7/2010
BLANK 0.0m - 3.0m
SCREEN 3.0m - 9.0m
GRAVEL PACK 2.5m - 9.0m
SANITARY SEAL/BENTONITE 2.0m - 2.5m
STABILISED WATER LEVEL -0.01 mBTOC
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (mBGS)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
					0		TOPSOIL: Clay, dark brown/ grey, moist, firm, no odour.	0.20	Cement seal
							Increasing stiffness.		
			MW03_1-1.05	✳	1		CLAY: mottled brown/ orange, dark grey, moist, no odour.	1.25	50 mm uPVC BlankCasing
			MW03_1.5-1.55	✳			As above but grey with mottling.		
					2				Bentonite seal
							CLAY: brown with grey lenses, firm, moist, no odour.	2.50	
					3				
					4				
					5		Very moist.		
					6				0.8mm graded sand
									50 mm uPVC Slotted Screen
					7				
							Wet.		
					8		▽		
					9		End soil bore @ 9.00 m Total Depth: 9.00 m	9.00	

BORING / WELL CONSTRUCTION LOG 60156173_BORELOGS_MW_28JUL10.GPJ HLA_SYD.GDT 28/7/10

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TEST PIT LOG

TP05

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
EXCAVATION METHOD Excavator
SAMPLING METHOD Grab
SURFACE ELEVATION
COMMENTS

DATE 26/5/2010
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0			TP05_ 0.05-0.10				TOPSOIL: Silt with CLAY, dark brown, soft, slightly moist, abundant roots, no odour.	
0			TP05_ 0.50-0.55	✳			CLAY: dark brown, firm, moist, abundant roots, no odour.	0.50
0			TP05_ 0.90-1.00		1		CLAY: grey, soft to firm, moist, no odour.	0.90
							CLAY: mottled 40% light brown 60% grey, soft-firm, moist, no odour.	1.20
0			TP05_ 1.40-1.50					1.50
							End Test Pit @ 1.50 m Total Depth: 1.50 m	

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TEST PIT LOG

TP06

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
EXCAVATION METHOD Excavator
SAMPLING METHOD Grab
SURFACE ELEVATION
COMMENTS

DATE 26/5/2010
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0			TP06_ 0.05-0.10	✳			FILL: Silt with Clay, brown, loose/ soft, slightly moist, charcoal pieces, no odour.	
0			TP06_ 0.50-0.55				FILL: Silt with Clay, brown, loose/ soft, slightly moist, clay inclusions - mottled 40% light brown 60% grey, roots, no odour.	0.50
0			TP06_ 0.90-0.95		1		CLAY: mottled dark brown, red brown and light brown, stiff, slightly moist, no odour.	0.90
							CLAY: mottled 40% light brown 60% grey, soft-firm, moist. End Test Pit @1.60 m Total Depth: 1.60 m	1.60

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TEST PIT LOG

TP07

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
EXCAVATION METHOD Excavator
SAMPLING METHOD Grab
SURFACE ELEVATION
COMMENTS

DATE 26/5/2010
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0			TP07_ 0.05-0.10				FILL: CLAY, dark brown, soft - firm, brick fragments, weathered sandstone, charcoal, moist, no odour.	
0			TP07_ 0.50-0.55	✳			As above, but only slightly moist.	0.50
0			TP07_ 0.85-0.90		1		CLAY: mottled 10% red, 90% dark grey, stiff, slightly moist, roots, no odour.	0.85
							As above but stiff and moist. End Test Pit @ 1.50 m. Total Depth: 1.50 m	1.50

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TEST PIT LOG

TP11

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
EXCAVATION METHOD Excavator
SAMPLING METHOD Grab
SURFACE ELEVATION
COMMENTS

DATE 26/5/2010
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0			TP11_ 0.05-0.10				FILL: Sand, brown, coarse grains and gravel, loose, moist, no odour.	
								0.25
							CLAY: mottled brown/ grey, red, soft to firm, no odour.	
0			TP11_ 0.50-0.55	✳				
								0.60
							CLAY: brown/ grey, loose, dry, roots, no odour.	
								0.95
0			TP11_ 1.00-1.05		1		CLAY: motteled dark grey and orange, stiff, slightly moist, roots, no odour.	1.05
							End Test Pit @ 1.05m Total Depth: 1.05 m	

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Level 45, 80 Collins Street
MELBOURNE VIC 3004
Telephone: 03 9653 1234
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TEST PIT LOG

TP12

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
EXCAVATION METHOD Excavator
SAMPLING METHOD Grab
SURFACE ELEVATION
COMMENTS

DATE 26/5/2010
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
0			TP12_ 0.05-0.10				FILL: Sand, dark brown, loose, medium sand, moist, roots, brick, visible fertiliser pallets, mulch, no odour.	
							Wooden post.	
0			TP12_ 0.50-0.55					0.60
							CLAY: dark brown with red mottling, stiff, slightly moist, no odour	0.80
							CLAY: grey with orange mottling, stiff, slightly moist, no odour.	
0			TP12_ 1.00-1.05		1			
								1.50
							End Test Pit @ 1.50 m. Total Depth: 1.50 m	

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **26/05/2010**	**TP-14**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT**	Length: **3.0 m**	Easting: **353068 m**	R.L. Surface:		
Equipment: **JCB 8045 ZTS Excavator**	Width: **1.0 m**	Northing: **5786959 m**	Datum: **MGA**		

Sample/Test			Material Substance						
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0				ML	SILT: low plasticity, brown, with some clay, roots.	D	St	
			Ds			CH	CLAY: high plasticity, brown, trace sand.	D-M		
		0.5	Bs Ds				dark brown.	M	St-VSt	
				HV=56					St	
		1.0								
				PP=200,270,250,310			mottled grey, orange and brown.		F-St	
		1.5							St	
		2.0		PP=300,140,240						
			Ds	HV=58						
		2.5								DCP terminated at 2.4m.
		3.0					Test Pit TP-14 terminated at 3m			
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 31.1.2011

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **26/05/2010**	**TP-15**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352967 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786983 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, trace fine to medium grained sand, roots.	D-M	St-VSt	
		0.5	Bs			CH	CLAY: high plasticity, dark brown, trace roots.	M		
		1.0								
		1.5	Ds	HV=134 PP=450,220,410 410			mottled orange, grey and brown.		St	
		2.0	Ds	HV=70 PP=250,270,280						
		2.5								
		3.0					Test Pit TP-15 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-16**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352444 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787363 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt	
						CH	CLAY: high plasticity, brown, grey and orange, trace roots.	M		
		0.5	Ds	HV=132 PP=400,400,600						
		1.0					mottled grey, orange and brown.		St	
		1.5	Ds	HV=64 PP=200,220,250			mottled grey and orange.			
		2.0	Ds	HV=50 PP=150,150,210						
		2.5								
		3.0		HV=50 PP=160,220,200			Test Pit TP-16 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-17**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352495 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787489 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low to medium plasticity, dark brown, with some clay, roots.	D-M	VSt	
						CH	CLAY: high plasticity, dark brown, trace roots.	M		
		0.5	Ds	HV=138 PP=300,300,500 520						
		1.0							St	
		1.5		HV=80 PP=300,300,280 310			mottled grey, orange and brown.		F-St	
		2.0	Ds				trace fine to medium grained sand.			
		2.5		HV=58 PP=200,150,150 180					St-VSt	
		3.0					Test Pit TP-17 terminated at 3m			DCP terminated at 3.1m
		3.5								
		4.0								

DCP (blows per 100mm): 5 10 15 20 25 30

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-18**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352848 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787110 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	Clayey SILT: low plasticity, dark brown, trace fine to medium grained sand.	D-M	St	
		0.5	Bs Ds	HV=55 PP=300,320,300 350		CH	CLAY: high plasticity, brown.			
		1.0					brown and grey.	M	VSt	
		1.5		HV=145 PP=410,450,500 350			mottled grey and orange.		St	
		2.0	Ds	HV=72 PP=280,350,380 350						
		2.5								
		3.0					Test Pit TP-18 terminated at 3.1m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests
- U_{50} Undisturbed sample 50mm diameter
- Ds Disturbed sample
- Bs Bulk sample
- E Environmental sample
- HV Hand vane (kPa)
- PP Pocket penetrometer (kPa)
- DB Double bouncing

Classification symbols and soil description based on unified classification system

Moisture
- D Dry
- M Moist
- W Wet

Consistency
- VS Very soft
- S Soft
- F Firm
- St Stiff
- VSt Very stiff
- H Hard
- Fb Friable

Density Index
- VL Very loose
- L Loose
- MD Medium dense
- D Dense
- VD Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-19**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352754 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786679 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown.	M		
		0.5	Ds	HV=50 PP=150,180,150,200						
		1.0					mottled grey and orange.		F	
		1.5		HV=40 PP=150,120,100,150					F-St	
		2.0	Ds	HV=48 PP=150,200,200,250					St-VSt	
		2.5								
		3.0					Test Pit TP-19 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-20**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352635 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786571 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, fine to medium grained sand, roots.	D-M	St	
		0.5	Ds	HV=85 PP=200,220,250,300		CH	CLAY: high plasticity, brown.	M		
		1.0								
		1.5		HV=68 PP=280,280,250,210			mottled grey and orange.		F-St	
		2.0	Ds	HV=48 PP=150,180,210,150			trace fine to coarse grained sand.		St-VSt	
		2.5								
		3.0					Test Pit TP-20 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-21**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352861 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786393 m** Datum: **MGA**

Sample/Test			Material Substance						
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St
		0.5	Ds	HV=85 PP=300,320,400 400		CH	CLAY: high plasticity, brown.	M	
		1.0					mottled grey and orange.		F-St
		1.5		HV=60 PP=200,210,210 250					
		2.0	Ds	HV=40 PP=150,150,180 200					St-VSt
		2.5							
		3.0					Test Pit TP-21 terminated at 3m		
		3.5							
		4.0							

DCP (blows per 100mm): 5 10 15 20 25 30

DCP terminated at 3.2m.

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

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EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-22**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked: CSL	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352660 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787051 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	Ds	HV=80 PP=250,200,250 300		CH	CLAY: high plasticity, brown with some grey.	M		
		1.0								
		1.5		HV=68 PP=250,300,250 220			mottled grey and orange.		F-St	
		2.0	Ds	HV=40 PP=150,200,200 180						
		2.5							St-VSt	
		3.0								
							Test Pit TP-22 terminated at 3.2m			DCP terminated at 3.2m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **27/05/2010**	**TP-23**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352648 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787238 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown, trace roots.	M		
		0.5	Bs	HV=55 PP=250,310,380 340						
		1.0					mottled grey and orange.			
		1.5		HV=85 PP=300,280,350 290					F-St	
		2.0	Ds	HV=50 PP=280,280,250 260						
		2.5							St	
		3.0					Test Pit TP-23 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-24**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352675 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786410 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	E			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	E Ds	HV=68 PP=250,250,400		CH	CLAY: high plasticity, brown, trace roots.	M		
		1.0					mottled grey and orange.			
		1.5	E Ds	HV=65 PP=290,220,290					F-St	
		2.0	Ds	HV=40 PP=150,150,180			with some fine to coarse grained sand.			
		2.5	Ds						St-VSt	
		3.0					Test Pit TP-24 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

DCP (blows per 100mm): 5 10 15 20 25 30

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-25**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352977 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786420 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	E				SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt	
			Ds					M		
						CH	CLAY: high plasticity, brown, trace roots.		St	
		0.5	E	HV=75 PP=210,250,300 300						
			Bs Ds							
		1.0					mottled grey and orange.			
		1.5	E	HV=60 PP=290,300,280 310						
		2.0	Ds	HV=58 PP=180,250,250 220			with some fine to coarse grained sand.		St-VSt	
		2.5								
		3.0					Test Pit TP-25 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-26**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **353044 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786514 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index	DCP (blows per 100mm) 5 10 15 20 25 30
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
		0.5	Ds	HV=45 PP=150,150,180 160		CH	CLAY: high plasticity, brown, trace roots.	M	F-St	
		1.0					mottled grey and orange.			
		1.5		HV=35 PP=200,180,210 150						
		2.0	Ds	HV=38 PP=150,150,120 160			with some fine to coarse grained sand.			
		2.5							St-VSt	
		3.0					Test Pit TP-26 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-27**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **353037 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5786882 m** Datum: **MGA**

Sample/Test			Material Substance					
water	R.L. (m)	depth (m)	sample	test	graphic log	classification symbol	description soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency/ density index
None Observed		0.0	Ds			ML	SILT: low plasticity, dark brown, with some clay, roots.	D-M	St-VSt
		0.5		HV=90 PP=350,350,450		CH	CLAY: medium plasticity, brown, trace roots.	M	St
			Bs Ds	310					
		1.0					mottled grey and orange.		
		1.5		HV=74 PP=250,310,310			280		
		2.0	Ds	HV=62 PP=150,150,200			180		St-VSt
		2.5							
		3.0					Test Pit TP-27 terminated at 3m		
		3.5							
		4.0							

DCP (blows per 100mm): 5 10 15 20 25 30

DCP terminated at 3.1m.

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-28**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352664 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787310 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds				SILT: low plasticity, dark brown, with some clay, roots.	D-M	VSt	
						CH	CLAY: high plasticity, brown, trace roots.	M	St-VSt	
		0.5		HV=130						
			Bs Ds	PP=450,600,600 300						
		1.0					mottled grey and orange.			
		1.5		HV=60 PP=300,290,310 240					F-St	
		2.0		HV=40						
			Ds	PP=150,180,150 200			trace fine to coarse grained sand.			
		2.5							St	
		3.0								DCP terminated at 3.1m.
							Test Pit TP-28 terminated at 3.2m			
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM

EXCAVATION LOG

Client: **Growth Areas Authority**	Project No: **60156173**	Pit No:
Project: **Berwick Waterways**	Date (Start-Finish): **28/05/2010**	**TP-29**
Location: **Homestead Rd & Centre Rd, Berwick**	Logged: **KS** Checked:	Sheet 1 of 1

Excavation Type: **TEST PIT** Length: **3.0 m** Easting: **352754 m** R.L. Surface:

Equipment: **JCB 8045 ZTS Excavator** Width: **1.0 m** Northing: **5787366 m** Datum: **MGA**

water	R.L. (m)	depth (m)	Sample/Test: sample	Sample/Test: test	graphic log	classification symbol	description (soil type: plasticity or particle characteristics, colour, secondary and minor components)	moisture condition	consistency/ density index	DCP (blows per 100mm)
None Observed		0.0	Ds				SILT: low plasticity, dark brown, with some clay, roots.	D-M	St	
						CH	CLAY: high plasticity, brown, trace roots.	M		
		0.5	Ds	HV=140 PP=500,450,500 400						
		1.0					mottled grey and orange.		F-St	
		1.5		HV=65 PP=280,280,250 250						
		2.0	Ds	HV=40 PP=150,150,180 220			with some fine to coarse grained sand.			
		2.5							St-VSt	
		3.0					Test Pit TP-29 terminated at 3m			DCP terminated at 3.1m.
		3.5								
		4.0								

Water
- water level on date shown
- water inflow
- water outflow

Samples, Tests

U_{50}	Undisturbed sample 50mm diameter
Ds	Disturbed sample
Bs	Bulk sample
E	Environmental sample
HV	Hand vane (kPa)
PP	Pocket penetrometer (kPa)
DB	Double bouncing

Classification symbols and soil description based on unified classification system

Moisture

D	Dry
M	Moist
W	Wet

Consistency

VS	Very soft
S	Soft
F	Firm
St	Stiff
VSt	Very stiff
H	Hard
Fb	Friable

Density Index

VL	Very loose
L	Loose
MD	Medium dense
D	Dense
VD	Very dense

EXCAVATION AECOM WITH DCP 60156173 - BERWICK WATERWAYS.GPJ AECOMMELBG7.GDT 21.12.2010

AECOM
Level 45, 80 Collins Street
MELBOURNE VIC 3004
Telephone: 03 9653 1234
Fax: 03 9654 7117

BOREHOLE LOG BH32

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION
COMMENTS

DATE 5/7/2010
SURFACE ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							TOPSOIL: Clay, dark brown/ grey, firm, moist, no odour.	0.10
							Increasing stiffness.	
							CLAY: mottled 60% grey, 20% orange/ brown, 20% dark brown/ grey, stiff, moist, no odour.	
0			BH32_ 1-1.05		1			1.05
							End soil bore @ 1.05 m Total Depth: 1.05 m	

AECOM
Level 45, 80 Collins Street
MELBOURNE VIC 3004
Telephone: 03 9653 1234
Fax: 03 9654 7117

BOREHOLE LOG BH33

PROJECT NUMBER 60156173
PROJECT NAME GAA Berwick Waterways
LOCATION Berwick
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
LOGGED BY J. Hume
STABILISED WATER LEVEL
GROUND WATER ELEVATION
COMMENTS

DATE 6/7/2010
SURFACE ELEVATION

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							TOPSOIL: Clay, dark brown/ grey, firm, moist, no odour.	
							Increasing stiffness	0.20
							CLAY: grey mottled, dark grey, orange/ brown, moist, stiff, no odour.	
0			BH33_ 0.65-0.7	✳				0.70
							End soil bore @ 0.70 m Total Depth: 0.70 m	

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Appendix J

Calibration Certificates

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HydroTerra

EQUIPMENT QUALITY REPORT
Water Quality Meter:

The following equipment has been issued as follows:

☑ Equipment is clean ☑ Impeller and probe check

Calibration Results		
Parameter	Standard	Result
Temperature	25°C	Factory Calibrated (°C)
pH	7 Units	7.00 Units
pH span	4Units	4.00 Units
Conductivity	12880 µS/cm	12882 µS/cm
DO	100 %	100.9 %
Redox	240 mV	240.1 mV
Quick Cal	HI9828-0	

Date: 14/7/10

Calibrated by: Ben

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

Item	HT Id No.	Sent	Returned
Water Quality Meter Hanna/Hydrolab/YSI	392	✓	
Manual	N/A	✓	
Probe Cluster		✓	
In situ monitoring cage	N/A	✓	
Storage cup	N/A	✓	
Flow through Cell	N/A	✓	
Calibration cup and lid	N/A	✓	
Spare Batteries		✓	
Test and Tag requested			

☑ Equipment voltage ☑ Pre-Delivery Calibration confirmation Test

Date: 14/7/10

Checked by: Ben

HT JOB NO: 3250 CLIENTS REF: P/O No: 60156173

RETURN DATE: / / CONDITION ON RETURN: _____

TIME:

NOTES: _____

2 Wingrove Street • Alphington • VIC• 3078 • Australia
Telephone: 03 9490 1422 • **Fax:** 03 9490 1452
Email: info@hydroterra.com.au **Internet:** www.hydroterra.com.au

EQUIPMENT QUALITY REPORT
Water level or Interface meter:

The following equipment has been issued as follows:

☑ Equipment is clean and mechanically undamaged

Calibration Results		
Parameter	Standard	Result
Water		✓
Oil		✓
Battery		8.4 v

Date: 5/07/2010
Calibrated by: Glen

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

Item	HT Id No	Sent	Returned
Solinst Water Level **or** Interface Meter	348	✓	
Instruction leaflet	N/A	✓	
Tape Guide	N/A	✓	
Spare 9V battery. Qty 2 Voltage 9.1 v	N/A	✓	
Carry Case		✓	
Instrument Tested and passed			

Date: 14/07/2010
Checked by: Glen

HT JOB NO: 3250

CLIENTS REF: P/O No: 60156173

RETURN DATE: / /

CONDITION ON RETURN:

TIME:
NOTES:

2 Wingrove Street • Alphington • VIC• 3078 • Australia
Telephone: 03 9490 1422 • **Fax:** 03 9490 1452
Email: info@hydroterra.com.au **Internet:** www.hydroterra.com.au

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Appendix K

Laboratory Certificates of Analysis and Chain of Custody Documentation

Form: AECOM

Courier

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: jennifer.hume@aecom.com

Laboratory Details
Lab. Name: ~~ALS~~ MGT
Lab. Address:
Contact Name:
Lab. Ref:
Tel: [redacted]
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: GAA Berwick Waterways
Project Number: 60156173 / 1.01
Purchase Order Number: 60156173 / 1.01
Sample collected by: JH
Sample Results to be returned to: jennifer.hume@aecom.com

Specifications:	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☑ Email	☐ Yes	☐ No	☐ N/A
7. Report Format: 8. Project Manager: tel:			

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Heavy metals*	Organochlorine Pesticides (OCPs) and Organophosphorus Pesticides (OPPs)	TPH	PAH	Acid sulphate soil (POCAS) asses	IWRCT 621 Screen	Remarks & comments
~~TP~~SP01				x			x	x	x			X	X	X	X			Metals
SP02				x			x	x	x									As, Cd, Cr-VI, Cu
SP03				x			x	x	x									Co, Pb, Hg, Mo, Ni,
SP04				x			x		x									Sn, Se, Zn
TP05_0.05-0.10				x			x	x	x									
TP05_0.50-0.55				x			x	x	x			X	X	X	X	X	X	
TP05-0.90-1.00				x			x	x	x									HOLD
TP05-1.40-1.50				x			x	x	x									HOLD
TP06_0.05-0.10				x			x	x	x								X	
TP06_0.50-0.55				x			x	x	x									HOLD

Relinquished By:
Name: [signature] Date:
of: Aecom Time:

Received by:
Name: [signature] KARAN BATRA Date:
of: Time:

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment: ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co: Yes/No/NA

Relinquished By:
Name: Date:
of: Time:

Received by:
Name: Robyn J Date: 10/5 27/5
of: MGT Time:

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment: ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co: Yes/No/NA

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Revision: Oct 09
~~BMS-PM-DV-F016~~

Environment

Form: AECOM

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: jennifer.hume@aecom.com

Laboratory Details
Lab. Name: MGT
Lab. Address:
Contact Name:
Lab. Ref:
Tel: ~~85499600~~
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: GAA Berwick Waterways
Project Number: 60156173 / 1.01
Purchase Order Number: 60156173 / 1.01
Sample collected by: JH
Sample Results to be returned to: jennifer.hume@aecom.com

Specifications: Rep: 266139

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☑ Email	☐ Yes	☐ No	☐ N/A
7. Report Format: 8. Project Manager:			tel:

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Heavy metals	Organochlorine Pesticides (OCPs) and Organophosphorus Pesticides (OPPs)	TPH	PAH	Acid sulphate soil (POCAS) asses	IWRG 621 Screen	Remarks & comments
TP06_0.90-0.95				x			x	x	x									HOLD
TP07-0.05-0.10				x			x	x	x									HOLD
TP07_0.50-0.55				x			x	x	x								X	~~HOLD~~
TP07_0.85-0.90				x			x	x	x									HOLD
SP08				x			x	x	x									HOLD
SP09				x			x	x	x									HOLD
SP10				x			x	x	x			X	X	X	X			
TP11_0.05-0.10				x			x	x	x									HOLD
TP11_0.50-0.55				x			x	x	x			X	X	X	X			
TP11_1.00-1.05				x			x	x	x									HOLD

Relinquished By:	**Received by:**	**Received in good condition?**	Yes/No/NA	**Method of Shipment** ☐ Courier ☐ Postal ☐ By Hand
Name: Date:	Name: Robyn Date: 24/5/10	**Samples received chilled?**	Yes/No/NA	**Consignment Note No.**
of: Time:	of: MGT Time:		Yes/No/NA	**Transport Co:**
Relinquished By:	**Received by:**	**Received in good condition?**	Yes/No/NA	**Method of Shipment** ☐ Courier ☐ Postal ☐ By Hand
Name: Date:	Name: Date:	**Samples received chilled?**	Yes/No/NA	**Consignment Note No.**
of: Time:	of: Time:		Yes/No/NA	**Transport Co:**

Form:

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email:

Laboratory Details
Lab. Name: MGT
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: | **Project Number:** | **Purchase Order Number:**

Sample collected by: | **Sample Results to be returned to:**

Specifications: Rep :266139

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☐ Email	☐ Yes	☐ No	☐ N/A

7. Report Format:
8. Project Manager: tel:

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Analysis Request: TWRG 621 Screen	Remarks & comments
TP12_0.05-0.10		~~25~~ 26/05/10											HOLD
TP12_0.50-0.55													HOLD
SB13*												X	
QC01												X	
QC02												X	Send to ALS Please
TP12_1.0-1.05	EXTRA SAMPLE												

Relinquished By:
Name: Date:
of: Time:

Received by:
Name: Robyn
Date:
of: MGT Time:

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co:

Relinquished By:
Name: Date:
of: Time:

Received by:
Name: Date:
of: Time:

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co:

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mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

Melbourne
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Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Sample Receipt Advice

Company name: **AECOM Aust P/L Melbourne**

Contact name: Jennifer Hume
Client job number: GAA BERWICK WATERWAYS 60156173/0.01
COC number: Not provided
Turn around time: 5 Day
Date received: May 27, 2010
MGT lab reference: **266139**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Samples received with Zero Headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Rhonda Chouman on Phone : (03) 9564 7055 or by e.mail: rchouman@mgtenv.com.au

Results will be delivered electronically via e.mail to Jennifer Hume - jennifer.hume@aecom.com.

mgt Sample Receipt

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Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 266139
Phone: 9653 1234
Fax: 9654 7117

Received: May 27, 2010 12:00
Due: Jun 3, 2010 12:19
Priority: 5 Day
Contact name: Jennifer Hume

Client Job No.: GAA BERWICK WATERWAYS
60156173/0.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	Arsenic	Cadmium	Chromium (hexavalent)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Tin	Zinc	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	EPA Screen Soil IWRG621	Total Recoverable Hydrocarbons	SPOCAS (Acid Sulphate Soils)
Laboratory where analysis is conducted																							
Melbourne Laboratory - NATA Site #1254					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																			
SP01	May 27, 2010		Soil	M10-MY14809	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP05_0.50-0.55	May 27, 2010		Soil	M10-MY14810	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TP06_0.05-0.10	May 27, 2010		Soil	M10-MY14811	X																X		
TP07_0.50-0.55	May 27, 2010		Soil	M10-MY14812	X																X		
SP10	May 27, 2010		Soil	M10-MY14813	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP11_0.50-0.55	May 27, 2010		Soil	M10-MY14814	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
SP13	May 27, 2010		Soil	M10-MY14815	X																X		
QC01	May 27, 2010		Soil	M10-MY14816	X																X		

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CERTIFICATE OF ANALYSIS

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne
Victoria 3004
Site: GAA BERWICK WATERWAYS 60156173/0.01

Report Number: 266139-V1 Page 1 of 27
Order Number:
Date Received: May 27, 2010
Date Sampled: May 26, 2010
Date Reported: Jun 11, 2010
Contact: Jennifer Hume

Methods

- USEPA 8260B MGT 350A Halogenated Volatile Organics
- USEPA 8270C Phenols
- USEPA 8082 Polychlorinated Biphenyls
- USEPA 8141A Organophosphorus Pesticides
- USEPA 8121 Chlorinated Hydrocarbons
- USEPA 8081A Organochlorine Pesticides
- USEPA 8270C Polycyclic Aromatic Hydrocarbons
- USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons
- TRH C6-C36 - MGT 100A
- USEPA 6020 Heavy Metals & USEPA 7470/71 Mercury
- USEPA 9010B Cyanide
- Method 102 - ANZECC - % Moisture
- APHA 3500-Cr Hexavalent Chromium-(Extraction:- USEPA3060)
- APHA 4500 pH by Direct Measurement
- USEPA 8260B - MGT 350A Volatile Organics by GCMS
- NEPM 404 (Fusion followed by ISE)

Comments

Notes

Authorised

Report Number: 266139-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Rhonda Chouman
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Andrew Cook
Chief Inorganic Chemist

NATA
WORLD RECOGNISED ACCREDITATION

NATA Corporate Accreditation Number 1261
The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement.
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Environmental Laboratories Industry Group

GLOSSARY OF TERMS

UNITS

mg/kg	milligrams per Kilogram	**mg/l**	milligrams per litre
ug/l	micrograms per litre	**ppm**	Parts per million
ppb	Parts per billion	**%**	Percentage
org/100ml	Organisms per 100 millilitres	**NTU**	Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates	Results <10 times the LOR : No Limit Results between 10-20 times LOR : RPD must lie between 0-50% Results >20 times LOR : RPD must lie between 0-20%
LCS Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-130%

GENERAL COMMENTS

1. All results in this report supersede any previously corresponded results.
2. All soil results are reported on a dry basis.
3. Samples are analysed on an as received basis.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR this is due to either Matrix Interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Orgaonchlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
7. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
8. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
9. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

REPORT SPECIFIC NOTES

NATA
WORLD RECOGNISED ACCREDITATION

Environmental Laboratory
Air Analysis
Water Analysis
Soil Contamination Analysis

NATA Accreditation
Stack Emission Sampling & Analysis
Trade Waste Sampling & Analysis
Groundwater Sampling & Analysis

35Years of Environmental Analysis & Experience – fully Australian Owned

Environmental Laboratories Industry Group

mgt Environmental

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Address: Level 9, 8 Exhibition St
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Order No.:
Report #: 266139
Phone: 9653 1234
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Received: May 27, 2010 12:00
Due: Jun 3, 2010 12:19
Priority: 5 Day
Contact name: Jennifer Hume

Client Job No.: GAA BERWICK WATERWAYS
60156173/0.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	Arsenic	Cadmium	Chromium (hexavalent)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Tin	Zinc	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	EPA Screen Soil IWRG621	Total Recoverable Hydrocarbons	SPOCAS (Acid Sulphate Soils)
Laboratory where analysis is conducted																							
Melbourne Laboratory - NATA Site #1254					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																			
SP01	May 27, 2010		Soil	M10-MY14809	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP05_0.50-0.55	May 27, 2010		Soil	M10-MY14810	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TP06_0.05-0.10	May 27, 2010		Soil	M10-MY14811	X																X		
TP07_0.50-0.55	May 27, 2010		Soil	M10-MY14812	X																X		
SP10	May 27, 2010		Soil	M10-MY14813	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP11_0.50-0.55	May 27, 2010		Soil	M10-MY14814	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
SP13	May 27, 2010		Soil	M10-MY14815	X																X		
QC01	May 27, 2010		Soil	M10-MY14816	X																X		

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Total Recoverable Hydrocarbons						
TRH C6-C9 Fraction by GC	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14 Fraction by GC	50	mg/kg	< 50	< 50	< 50	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100	< 100	< 100	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100	< 100	< 100	< 100
Monocyclic Aromatic Hydrocarbons						
Benzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Toluene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Ethylbenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Xylenes(ortho.meta and para)	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Fluorobenzene (surr.)	1	%	-	72	79	81
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benz(a)anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g.h.i)perylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a.h)anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
p-Terphenyl-d14 (surr.)	1	%	82	73	82	82
2-Fluorobiphenyl (surr.)	1	%	90	76	77	78

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Organochlorine Pesticides						
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Chlordane	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxophene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	101	86	97	83
Tetrachloro-m-xylene (surr.)	1	%	108	94	98	95
Chlorinated Hydrocarbons						
1.2-Dichlorobenzene	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
1.2.3-Trichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2.3.4-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2.3.5-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
1.2.4-Trichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2.4.5-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.3-Dichlorobenzene	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
1.3.5-Trichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.4-Dichlorobenzene	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
Benzal chloride	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Benzotrichloride	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Benzyl chloride	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Hexachlorocyclopentadiene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Hexachloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Pentachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Dibutylchlorendate (surr.)	1	%	-	86	97	83
Tetrachloro-m-xylene (surr.)	1	%	-	94	98	95
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Methyl azinphos	0.2	mg/kg	< 0.2	< 0.2	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Naled	0.5	mg/kg	< 0.5	< 0.5	-	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	98	88	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Total PCB	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	-	86	97	83
Tetrachloro-m-xylene (surr.)	1	%	-	94	98	95
Phenols						
2-Chlorophenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
2-Nitrophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
2.4-Dimethylphenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
2.4.6-Trichlorophenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
2.6-Dichlorophenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
4-Chloro-3-methylphenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Pentachlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenol	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
Phenol-d6 (surr.)	1	%	-	70	85	76
Halogenated Volatile Organics						
1.1-Dichloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.1-Dichloroethene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.1.1-Trichloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.1.1.2-Tetrachloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.1.2-Trichloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.1.2.2-Tetrachloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2-Dibromoethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2-Dichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2-Dichloroethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2-Dichloropropane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.2.3-Trichloropropane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.3-Dichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.3-Dichloropropane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
1.4-Dichlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Bromodichloromethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Bromoform	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Bromomethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Carbon Tetrachloride	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Chlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Chloroform	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Chloromethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
cis-1.2-Dichloroethene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
cis-1.3-Dichloropropene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Dibromochloromethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Dibromomethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Iodomethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Methylene chloride	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Tetrachloroethene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
trans-1.2-Dichloroethene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
trans-1.3-Dichloropropene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Trichloroethene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Trichlorofluoromethane	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Vinyl chloride	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Fluorobenzene (surr.)	1	%	-	72	79	81
Volatile Organics						
Styrene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
% Moisture	0.1	%	14	26	10	10
Chromium (hexavalent)	1	mg/kg	< 1	< 1	< 1	< 1
Cyanide (total)	5	mg/kg	-	< 5	< 5	< 5
Fluoride	100	mg/kg	-	120	130	200
pH (1:5 Aqueous extract)	0.1	units	-	6.8	6.7	7.1
Acidity Trail						
Acid trail - Titratable Actual Acidity	2	mol H+/t	-	20	-	-
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	-	21	-	-
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	-	< 2	-	-
sulfidic - Titratable Actual Acidity	0.02	% pyrite S	-	0.03	-	-
sulfidic - Titratable Peroxide Acidity	0.02	% pyrite S	-	0.03	-	-
sulfidic - Titratable Sulfidic Acidity	0.02	% pyrite S	-	< 0.02	-	-
Sulfur trail						
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	-	< 10	-	-
Sulfur - KCl Extractable	0.02	% S	-	< 0.02	-	-
Sulfur - Peroxide	0.02	% S	-	< 0.02	-	-
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	-	< 0.02	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
pH Measurements						
pH-KCL	0.1	units	-	6.0	-	-
pH-OX	0.1	units	-	5.9	-	-
Calcium Values						
Acid Reacted Calcium	0.02	% Ca	-	0.02	-	-
acidity - Acid Reacted Calcium	10	mol H+/t	-	< 10	-	-
Calcium - KCl Extractable	0.02	% Ca	-	0.15	-	-
Calcium - Peroxide	0.02	% Ca	-	0.17	-	-
sulfidic - Acid Reacted Calcium	0.02	% S	-	0.02	-	-
Magnesium Values						
Acid Reacted Magnesium	0.02	% Mg	-	< 0.02	-	-
acidity - Acid Reacted Magnesium	10	mol H+/t	-	< 10	-	-
Magnesium - KCl Extractable	0.02	% Mg	-	0.21	-	-
Magnesium- Peroxide	0.02	% Mg	-	0.21	-	-
sulfidic - Acid Reacted Magnesium	0.02	% S	-	< 0.02	-	-
Acid Base Accounting (SPOCAS)						
ANC Fineness Factor	0.5		-	1.5	-	-
Liming rate - SPOCAS	1	kg CaCO3/t	-	1.5	-	-
Net Acidity (acidity units) - SPOCAS	10	mol H+/t	-	20	-	-
Net Acidity (sulfur units) - SPOCAS	0.02	% S	-	0.03	-	-
Heavy Metals						
Arsenic	2	mg/kg	4.3	< 2	< 2	3.2
Cadmium	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	5	mg/kg	-	23	14	29
Cobalt	5	mg/kg	13	6.5	-	-
Copper	5	mg/kg	22	11	6.1	< 5
Lead	5	mg/kg	37	9.6	5.4	6.4
Molybdenum	10	mg/kg	< 10	< 10	< 10	< 10
Nickel	5	mg/kg	29	10	9.6	5.8

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
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AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP01**	**TP05_0.50-0.55**	**TP06_0.05-0.10**	**TP07_0.50-0.55**
	Lab Number		**O10-MY14809**	**O10-MY14810**	**O10-MY14811**	**O10-MY14812**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	5	mg/kg	-	< 5	< 5	< 5
Tin	10	mg/kg	< 10	< 10	< 10	< 10
Zinc	5	mg/kg	45	5.4	8.0	5.1
Mercury	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1

COMMENTS:

AECOM Aust P/L Melbourne	Client Sample ID		SP10	TP11_0.50-0.55	SP13	QC01
Level 9, 8 Exhibition St	Lab Number		O10-MY14813	O10-MY14814	O10-MY14815	O10-MY14816
Melbourne	Matrix		Soil	Soil	Soil	Soil
Victoria 3004	Sample Date		May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010
Analysis Type	**LOR**	**Units**				
Total Recoverable Hydrocarbons						
TRH C6-C9 Fraction by GC	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14 Fraction by GC	50	mg/kg	< 50	< 50	< 50	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100	< 100	< 100	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100	< 100	< 100	< 100
Monocyclic Aromatic Hydrocarbons						
Benzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Toluene	0.05	mg/kg	-	-	< 0.05	< 0.05
Ethylbenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Xylenes(ortho.meta and para)	0.05	mg/kg	-	-	< 0.05	< 0.05
Fluorobenzene (surr.)	1	%	-	-	76	83
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benz(a)anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g.h.i)perylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a.h)anthracene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
p-Terphenyl-d14 (surr.)	1	%	72	84	89	79
2-Fluorobiphenyl (surr.)	1	%	85	90	83	85

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Organochlorine Pesticides						
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Chlordane	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxophene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	99	102	92	84
Tetrachloro-m-xylene (surr.)	1	%	98	107	94	95
Chlorinated Hydrocarbons						
1.2-Dichlorobenzene	0.2	mg/kg	-	-	< 0.2	< 0.2
1.2.3-Trichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2.3.4-Tetrachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2.3.5-Tetrachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
1.2.4-Trichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2.4.5-Tetrachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.3-Dichlorobenzene	0.2	mg/kg	-	-	< 0.2	< 0.2
1.3.5-Trichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.4-Dichlorobenzene	0.2	mg/kg	-	-	< 0.2	< 0.2
Benzal chloride	0.05	mg/kg	-	-	< 0.05	< 0.05
Benzotrichloride	0.05	mg/kg	-	-	< 0.05	< 0.05
Benzyl chloride	0.2	mg/kg	-	-	< 0.2	< 0.2
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachlorobutadiene	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachlorocyclopentadiene	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Pentachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Dibutylchlorendate (surr.)	1	%	-	-	92	84
Tetrachloro-m-xylene (surr.)	1	%	-	-	94	95
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Methyl azinphos	0.2	mg/kg	< 0.2	< 0.2	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Naled	0.5	mg/kg	< 0.5	< 0.5	-	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	98	93	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	< 0.1	< 0.1
Total PCB	0.1	mg/kg	-	-	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	92	84
Tetrachloro-m-xylene (surr.)	1	%	-	-	94	95
Phenols						
2-Chlorophenol	0.2	mg/kg	-	-	< 0.2	< 0.2
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	< 0.2
2-Nitrophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
2.4-Dichlorophenol	0.2	mg/kg	-	-	< 0.2	< 0.2
2.4-Dimethylphenol	0.2	mg/kg	-	-	< 0.2	< 0.2
2.4.6-Trichlorophenol	0.2	mg/kg	-	-	< 0.2	< 0.2
2.6-Dichlorophenol	0.2	mg/kg	-	-	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	< 0.4
4-Chloro-3-methylphenol	0.2	mg/kg	-	-	< 0.2	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Pentachlorophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenol	0.2	mg/kg	-	-	< 0.2	< 0.2
Phenol-d6 (surr.)	1	%	-	-	87	90
Halogenated Volatile Organics						
1.1-Dichloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.1-Dichloroethene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.1.1-Trichloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.1.1.2-Tetrachloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.1.2-Trichloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.1.2.2-Tetrachloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2-Dibromoethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2-Dichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2-Dichloroethane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2-Dichloropropane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.2.3-Trichloropropane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.3-Dichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
1.3-Dichloropropane	0.05	mg/kg	-	-	< 0.05	< 0.05
1.4-Dichlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Bromodichloromethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Bromoform	0.05	mg/kg	-	-	< 0.05	< 0.05
Bromomethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Carbon Tetrachloride	0.05	mg/kg	-	-	< 0.05	< 0.05
Chlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Chloroform	0.05	mg/kg	-	-	< 0.05	< 0.05
Chloromethane	0.05	mg/kg	-	-	< 0.05	< 0.05
cis-1.2-Dichloroethene	0.05	mg/kg	-	-	< 0.05	< 0.05
cis-1.3-Dichloropropene	0.05	mg/kg	-	-	< 0.05	< 0.05
Dibromochloromethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Dibromomethane	0.05	mg/kg	-	-	< 0.05	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Iodomethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Methylene chloride	0.05	mg/kg	-	-	< 0.05	< 0.05
Tetrachloroethene	0.05	mg/kg	-	-	< 0.05	< 0.05
trans-1.2-Dichloroethene	0.05	mg/kg	-	-	< 0.05	< 0.05
trans-1.3-Dichloropropene	0.05	mg/kg	-	-	< 0.05	< 0.05
Trichloroethene	0.05	mg/kg	-	-	< 0.05	< 0.05
Trichlorofluoromethane	0.05	mg/kg	-	-	< 0.05	< 0.05
Vinyl chloride	0.05	mg/kg	-	-	< 0.05	< 0.05
Fluorobenzene (surr.)	1	%	-	-	76	83
Volatile Organics						
Styrene	0.05	mg/kg	-	-	< 0.05	< 0.05
% Moisture	0.1	%	17	20	30	9.9
Chromium (hexavalent)	1	mg/kg	< 1	< 1	< 1	< 1
Cyanide (total)	5	mg/kg	-	-	< 5	< 5
Fluoride	100	mg/kg	-	-	160	200
pH (1:5 Aqueous extract)	0.1	units	-	-	6.8	6.4
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	2.7	< 2
Cadmium	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	5	mg/kg	-	-	23	12
Cobalt	5	mg/kg	< 5	14	-	-
Copper	5	mg/kg	< 5	8.9	17	12
Lead	5	mg/kg	7.2	9.9	16	< 5
Molybdenum	10	mg/kg	< 10	< 10	< 10	< 10
Nickel	5	mg/kg	< 5	30	8.0	14
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Silver	5	mg/kg	-	-	< 5	< 5
Tin	10	mg/kg	< 10	< 10	< 10	< 10

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**SP10**	**TP11_0.50-0.55**	**SP13**	**QC01**
	Lab Number		**O10-MY14813**	**O10-MY14814**	**O10-MY14815**	**O10-MY14816**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**LOR**	**Units**				
Zinc	5	mg/kg	< 5	8.6	130	12
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1

COMMENTS:

AECOM Aust P/L Melbourne Level 9, 8 Exhibition St Melbourne Victoria 3004	Client Sample ID	SP01	SP01	RPD	SPIKE	LCS	Method blank
	Lab Number	10-MY14809	10-MY14809	10-MY14809	10-MY14809	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Aroclor-1016		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1221		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1232		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1242		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1248		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1254		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1260		< 0.1	< 0.1	< 1	-	-	< 0.1
Chromium (hexavalent)		< 1	< 1	< 1	102	99	< 1
Total PCB		< 0.5	< 0.1	< 1	-	-	< 0.1
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.05	< 0.05	< 1	85	96	< 0.05
4.4'-DDE		< 0.05	< 0.05	< 1	81	90	< 0.05
4.4'-DDT		< 0.05	< 0.05	< 1	72	73	< 0.05
a-BHC		< 0.05	< 0.05	< 1	80	97	< 0.05
Aldrin		< 0.05	< 0.05	< 1	82	93	< 0.05
b-BHC		< 0.05	< 0.05	< 1	91	98	< 0.05
Chlordane		< 0.1	< 0.1	< 1	-	-	< 0.1
d-BHC		< 0.05	< 0.05	< 1	80	101	< 0.05
Dieldrin		< 0.05	< 0.05	< 1	85	100	< 0.05
Endosulfan I		< 0.05	< 0.05	< 1	80	98	< 0.05
Endosulfan II		< 0.05	< 0.05	< 1	74	90	< 0.05
Endosulfan sulphate		< 0.05	< 0.05	< 1	76	95	< 0.05
Endrin		< 0.05	< 0.05	< 1	73	79	< 0.05
Endrin aldehyde		< 0.05	< 0.05	< 1	77	93	< 0.05
Endrin ketone		< 0.05	< 0.05	< 1	122	128	< 0.05
g-BHC (Lindane)		< 0.05	< 0.05	< 1	80	96	< 0.05
Heptachlor		< 0.05	< 0.05	< 1	75	87	< 0.05
Heptachlor epoxide		< 0.05	< 0.05	< 1	85	100	< 0.05
Hexachlorobenzene		< 0.05	< 0.05	< 1	84	97	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

Client Sample		**SP01**	**SP01**	**RPD**	**SPIKE**	**LCS**	**Method blank**
Lab Number		**10-MY14809**	**10-MY14809**	**10-MY14809**	**10-MY14809**	**Batch**	**Batch**
QA Description			**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Date		**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
Methoxychlor		< 0.05	< 0.05	< 1	72	76	< 0.05
Toxophene		< 0.1	< 0.1	< 1	-	-	< 0.1
Organophosphorous Pesticides		Batch	Batch	Batch	Batch		
Bolstar		< 0.2	< 0.2	< 1	-	-	< 0.2
Chlorpyrifos		< 0.2	< 0.2	< 1	-	-	< 0.2
Demeton-O		< 0.2	< 0.2	< 1	-	-	< 0.2
Diazinon		< 0.2	< 0.2	< 1	95	-	< 0.2
Dichlorvos		< 0.2	< 0.2	< 1	-	-	< 0.2
Disulfoton		< 0.2	< 0.2	< 1	-	-	< 0.2
Ethion		< 0.2	< 0.2	< 1	117	-	< 0.2
Ethoprop		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenitrothion		< 0.2	< 0.2	< 1	105	-	< 0.2
Fensulfothion		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Merphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl azinphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl parathion		< 0.2	< 0.2	< 1	110	-	< 0.2
Mevinphos		< 0.2	< 0.2	< 1	104	-	< 0.2
Naled		< 0.5	< 0.5	< 1	-	-	< 0.5
Phorate		< 0.2	< 0.2	< 1	-	-	< 0.2
Ronnel		< 0.2	< 0.2	< 1	-	-	< 0.2
Tokuthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Trichloronate		< 0.2	< 0.2	< 1	-	-	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne Level 9, 8 Exhibition St Melbourne Victoria 3004	Client Sample ID	TP05_0.50-0.55	TP05_0.50-0.55	RPD	SPIKE	LCS	Method blank
	Lab Number	10-MY14810	10-MY14810	10-MY14810	10-MY14810	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Cyanide (total)		< 5	< 5	130	82	92	< 5
Fluoride		< 100	< 100	< 1	94	-	< 100
Chlorinated Hydrocarbons		Batch	Batch	Batch	Batch		
1.2-Dichlorobenzene		< 0.2	< 0.2	< 1	73	94	< 0.2
1.2.3-Trichlorobenzene		< 0.05	< 0.05	< 1	86	88	< 0.05
1.2.3.4-Tetrachlorobenzene		< 0.05	< 0.05	< 1	100	78	< 0.05
1.2.3.5-Tetrachlorobenzene		< 0.05	< 0.05	< 1	-	88	< 0.05
1.2.4-Trichlorobenzene		< 0.05	< 0.05	< 1	-	86	< 0.05
1.2.4.5-Tetrachlorobenzene		< 0.05	< 0.05	< 1	83	96	< 0.05
1.3-Dichlorobenzene		< 0.2	< 0.2	< 1	90	72	< 0.2
1.3.5-Trichlorobenzene		< 0.05	< 0.05	< 1	92	85	< 0.05
1.4-Dichlorobenzene		< 0.2	< 0.2	< 1	83	96	< 0.2
Benzal chloride		< 0.05	< 0.05	< 1	-	91	< 0.05
Benzotrichloride		< 0.05	< 0.05	< 1	-	97	< 0.05
Benzyl chloride		< 0.2	< 0.2	< 1	-	-	< 0.2
Hexachlorobutadiene		< 0.05	< 0.05	< 1	81	91	< 0.05
Hexachlorocyclopentadiene		< 0.05	< 0.05	< 1	-	113	< 0.05
Hexachloroethane		< 0.05	< 0.05	< 1	73	91	< 0.05
Pentachlorobenzene		< 0.05	< 0.05	< 1	80	-	< 0.05
Acidity Trail							
Acid trail - Titratable Actual Acidity		20	20	< 1	-	-	-
Acid trail - Titratable Peroxide Acidity		21	21	32	-	-	-
Acid trail - Titratable Sulfidic Acidity		< 2	< 2	40	-	-	-
sulfidic - Titratable Actual Acidity		0.03	0.03	< 1	-	-	-
sulfidic - Titratable Peroxide Acidity		0.03	0.03	32	-	-	-
sulfidic - Titratable Sulfidic Acidity		< 0.02	< 0.02	40	-	-	-
Sulfur trail							
acidity - Peroxide Oxidisable Sulfur		< 10	< 10	10	-	-	-
Sulfur - KCl Extractable		< 0.02	< 0.02	22	-	-	-

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

	Client Sample	**TP05_0.50-0.55**	**TP05_0.50-0.55**	**RPD**	**SPIKE**
	Lab Number	**10-MY14810**	**10-MY14810**	**10-MY14810**	**10-MY14810**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**Units**			% RPD	% Recovery
Sulfur trail					
Sulfur - Peroxide		< 0.02	< 0.02	3.0	-
Sulfur - Peroxide Oxidisable Sulfur		< 0.02	< 0.02	10	-
Calcium Values					
Acid Reacted Calcium		0.02	0.02	21	-
acidity - Acid Reacted Calcium		< 10	< 10	< 1	-
Calcium - KCl Extractable		0.15	0.15	2.0	-
Calcium - Peroxide		0.17	0.17	1.0	-
sulfidic - Acid Reacted Calcium		0.02	< 0.02	21	-
Magnesium Values					
Acid Reacted Magnesium		< 0.02	< 0.02	< 1	-
acidity - Acid Reacted Magnesium		< 10	< 10	< 1	-
Magnesium - KCl Extractable		0.21	0.21	< 1	-
Magnesium- Peroxide		0.21	0.21	< 1	-
sulfidic - Acid Reacted Magnesium		< 0.02	< 0.02	< 1	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**TP07_0.50-0.55**	**TP07_0.50-0.55**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**10-MY14812**	**10-MY14812**	**10-MY14812**	**10-MY14812**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Total Recoverable Hydrocarbons		Batch	Batch	Batch	Batch		
TRH C6-C9 Fraction by GC		< 20	< 20	< 1	79	86	< 20
TRH C10-C14 Fraction by GC		120	170	35	106	129	< 50
TRH C15-C28 Fraction by GC		280	380	29	-	-	< 100
TRH C29-C36 Fraction by GC		< 100	< 100	< 1	-	-	< 100

COMMENTS:

AECOM Aust P/L Melbourne Level 9, 8 Exhibition St Melbourne Victoria 3004	Client Sample ID	TP11_0.50-0.55	TP11_0.50-0.55	RPD	SPIKE	LCS	Method blank
	Lab Number	10-MY14814	10-MY14814	10-MY14814	10-MY14814	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Polycyclic Aromatic Hydrocarbons							
Acenaphthene		< 0.1	< 0.1	< 1	91	87	< 0.1
Acenaphthylene		< 0.1	< 0.1	< 1	92	93	< 0.1
Anthracene		< 0.1	< 0.1	< 1	98	96	< 0.1
Benz(a)anthracene		< 0.1	< 0.1	< 1	90	88	< 0.1
Benzo(a)pyrene		< 0.1	< 0.1	< 1	85	84	< 0.1
Benzo(b)fluoranthene		< 0.1	< 0.1	< 1	85	91	< 0.1
Benzo(g.h.i)perylene		< 0.1	< 0.1	< 1	74	83	< 0.1
Benzo(k)fluoranthene		< 0.1	< 0.1	< 1	95	91	< 0.1
Chrysene		< 0.1	< 0.1	< 1	91	88	< 0.1
Dibenz(a.h)anthracene		< 0.1	< 0.1	< 1	86	91	< 0.1
Fluoranthene		< 0.1	< 0.1	< 1	85	79	< 0.1
Fluorene		< 0.1	< 0.1	< 1	91	88	< 0.1
Indeno(1.2.3-cd)pyrene		< 0.1	< 0.1	< 1	81	92	< 0.1
Naphthalene		< 0.1	< 0.1	< 1	88	85	< 0.1
Phenanthrene		< 0.1	< 0.1	< 1	88	94	< 0.1
Pyrene		< 0.1	< 0.1	< 1	87	80	< 0.1
Phenols							
2-Chlorophenol		-	< 0.2	< 1	94	87	< 0.2
2-Methylphenol (o-Cresol)		-	< 0.2	< 1	-	88	< 0.2
2-Nitrophenol		-	< 0.5	< 1	-	73	< 0.5
2.4-Dichlorophenol		-	< 0.2	< 1	91	83	< 0.2
2.4-Dimethylphenol		-	< 0.2	< 1	74	84	< 0.2
2.4.6-Trichlorophenol		-	< 0.2	< 1	82	80	< 0.2
2.6-Dichlorophenol		-	< 0.2	< 1	94	87	< 0.2
3&4-Methylphenol (m&p-Cresol)		-	< 0.4	< 1	91	85	< 0.4
4-Chloro-3-methylphenol		-	< 0.2	< 1	90	84	< 0.2
Pentachlorophenol		-	< 0.5	< 1	56	73	< 0.5
Phenol		-	< 0.2	< 1	93	87	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**SP13**	**SP13**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**10-MY14815**	**10-MY14815**	**10-MY14815**	**10-MY14815**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
pH (1:5 Aqueous extract)		6.8	6.7	-	-	-	-
Heavy Metals							
Cobalt		-	-	-	-	109	< 5

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**QC01**	**QC01**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**10-MY14816**	**10-MY14816**	**10-MY14816**	**10-MY14816**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**	**May 26, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Monocyclic Aromatic Hydrocarbons							
Benzene		< 0.05	< 0.05	< 1	84	95	< 0.05
Toluene		< 0.05	< 0.05	< 1	86	94	< 0.05
Ethylbenzene		< 0.05	< 0.05	< 1	90	97	< 0.05
Xylenes(ortho.meta and para)		< 0.05	< 0.05	< 1	83	91	< 0.05
Halogenated Volatile Organics							
1.1-Dichloroethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.1-Dichloroethene		< 0.05	< 0.05	< 1	83	97	< 0.05
1.1.1-Trichloroethane		< 0.05	< 0.05	< 1	81	91	< 0.05
1.1.1.2-Tetrachloroethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.1.2-Trichloroethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.1.2.2-Tetrachloroethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.2-Dibromoethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.2-Dichlorobenzene		< 0.05	< 0.05	< 1	81	-	< 0.05
1.2-Dichloroethane		< 0.05	< 0.05	< 1	81	92	< 0.05
1.2-Dichloropropane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.2.3-Trichloropropane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.3-Dichlorobenzene		< 0.05	< 0.05	< 1	-	-	< 0.05
1.3-Dichloropropane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.4-Dichlorobenzene		< 0.05	< 0.05	< 1	-	-	< 0.05
Bromodichloromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Bromoform		< 0.05	< 0.05	< 1	-	-	< 0.05
Bromomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Carbon Tetrachloride		< 0.05	< 0.05	< 1	75	83	< 0.05
Chlorobenzene		< 0.05	< 0.05	< 1	-	-	< 0.05
Chloroform		< 0.05	< 0.05	< 1	-	-	< 0.05
Chloromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
cis-1.2-Dichloroethene		< 0.05	< 0.05	< 1	-	-	< 0.05
cis-1.3-Dichloropropene		< 0.05	< 0.05	< 1	-	-	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

	Client Sample	QC01	QC01	RPD	SPIKE	LCS	Method blank
	Lab Number	10-MY14816	10-MY14816	10-MY14816	10-MY14816	Batch	Batch
	QA Description		Duplicate	Duplicate % RPD	Spike % Recovery	% Recovery	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010	May 26, 2010
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Halogenated Volatile Organics							
Dibromochloromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Dibromomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Iodomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Methylene chloride		< 0.05	< 0.05	< 1	-	-	< 0.05
Tetrachloroethene		< 0.05	< 0.05	< 1	-	-	< 0.05
trans-1.2-Dichloroethene		< 0.05	< 0.05	< 1	-	-	< 0.05
trans-1.3-Dichloropropene		< 0.05	< 0.05	< 1	-	-	< 0.05
Trichloroethene		< 0.05	< 0.05	< 1	87	95	< 0.05
Trichlorofluoromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Vinyl chloride		< 0.05	< 0.05	< 1	-	-	< 0.05
Heavy Metals							
Arsenic		< 2	< 2	< 1	81	99	< 2
Cadmium		< 0.5	< 0.5	< 1	87	105	< 0.5
Chromium		12	12	< 1	87	103	< 5
Cobalt		-	< 5	13	84	-	-
Copper		12	14	14	100	-	< 5
Lead		< 5	5.1	8.6	81	115	< 5
Mercury		< 0.1	< 0.1	< 1	72	76	< 0.1
Molybdenum		< 10	< 10	< 1	82	100	< 10
Nickel		14	17	13	75	103	< 5
Selenium		< 2	< 2	< 1	77	97	< 2
Silver		< 5	< 5	< 1	87	102	< 5
Tin		< 10	< 10	< 1	82	106	< 10
Zinc		12	12	5.2	76	100	< 5
Volatile Organics							
Styrene		< 0.05	< 0.05	< 1	-	-	< 0.05

COMMENTS:

Form:

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: eric.pritchard@aecom.com

Laboratory Details

Lab. Name: MGT Environmental
Lab. Address: 3 Kingston Town Close, Oakleigh
Contact Name: Rhonda Chouman
Lab. Ref:
Tel: 95647~~490~~ 7055
Fax: 95047190
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: **Project Number:** 60156173 **Purchase Order Number:** 60156173

Sample collected by: Kisina Sofele **Sample Results to be returned to:** eric.pritchard@aecom.com

Specifications:

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☑ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☐ Email	☐ Yes	☐ No	☐ N/A

7. Report Format: 8. Project Manager: tel:

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EPA IWRG 621 Screen	Metals (IWRG 621 metals)	OCP/OPP	TPH	PAH	POCAS (acid sulphate soil ass.)	Remarks & comments
	TP24_0.1-0.2	28/5/10		X					X		1 JAR							
	TP24_0.5-0.6			X					X		1 JAR/ [illegible]	X					X	
	TP24_1.5-1.6			X					X		1 JAR/ [illegible]							286326
	TP25_0.1-0.2			X					X		1 JAR		X	X	X	X		
	TP25_0.5-0.6			X					X		1 JAR + 1 SNAPLOCK BAG						X	31/5 Adam
	TP25_1.5-1.6			X					X		1 JAR		X					
	SP30			X					X				X	X	X	X		
	SP31			X					X				X	X	X	X		
	TP22_0.5-0.7			X					X		1 SNAP-LOCK BAG							PLEASE HOLD

Relinquished By: Kisina Sofele
Name: [signature] Date: 31-05-10
of: AECOM PTY. LTD. Time: 15:30

Received by: MGT.
Name: Date: 31/5
of: Time: 5:05

Relinquished By:
Name: Date:
of: Time:

Received by:
Name: Date:
of: Time:

Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Samples received chilled?	Yes/No/NA	Consignment Note No.	
	Yes/No/NA	Transport Co:	
Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Samples received chilled?	Yes/No/NA	Consignment Note No.	
	Yes/No/NA	Transport Co:	

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Sample Receipt Advice

Company name: **AECOM Aust P/L Melbourne**

Contact name: Eric Pritchard
Client job number: 60156173
COC number: Not provided
Turn around time: 5 Day
Date received: May 31, 2010
MGT lab reference: **266323**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Samples received with Zero Headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Rhonda Chouman on Phone : (03) 9564 7055 or by e.mail: rchouman@mgtenv.com.au

Results will be delivered electronically via e.mail to Eric Pritchard - eric.pritchard@aecom.com.

mgt Sample Receipt

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 266323
Phone: 9653 1234
Fax: 9654 7117

Received: May 31, 2010 12:00
Due: Jun 7, 2010 05:45
Priority: 5 Day
Contact name: Eric Pritchard

Client Job No.: 60156173

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	EPA Screen Soil IWRG621	Total Recoverable Hydrocarbons	SPOCAS (Acid Sulphate Soils)
Laboratory where analysis is conducted																							
Melbourne Laboratory - NATA Site #1254					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																			
TP24_0.5-0.6	May 28, 2010		Soil	M10-MY15740	X																X		X
TP25_0.1-0.2	May 28, 2010		Soil	M10-MY15741	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP25_0.5-0.6	May 28, 2010		Soil	M10-MY15742	X																		X
SP30	May 28, 2010		Soil	M10-MY15743	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
SP31	May 28, 2010		Soil	M10-MY15744	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne
Victoria 3004
Site: 60156173

Report Number: 266323-V1 Page 1 of 20
Order Number: 60156173
Date Received: May 31, 2010
Date Sampled: May 28, 2010
Date Reported: Jun 13, 2010
Contact: Eric Pritchard

Methods

- USEPA 8260B MGT 350A Halogenated Volatile Organics
- USEPA 8270C Phenols
- USEPA 8082 Polychlorinated Biphenyls
- USEPA 8141A Organophosphorus Pesticides
- USEPA 8121 Chlorinated Hydrocarbons
- USEPA 8081A Organochlorine Pesticides
- USEPA 8270C Polycyclic Aromatic Hydrocarbons
- USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons
- TRH C6-C36 - MGT 100A
- USEPA 6020 Heavy Metals & USEPA 7470/71 Mercury
- USEPA 9010B Cyanide
- Method 102 - ANZECC - % Moisture
- APHA 3500-Cr Hexavalent Chromium-(Extraction:- USEPA3060)
- APHA 4500 pH by Direct Measurement
- USEPA 8260B - MGT 350A Volatile Organics by GCMS
- NEPM 404 (Fusion followed by ISE)

Comments

Notes

Authorised

Report Number: 266323-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Rhonda Chouman
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Andrew Cook
Chief Inorganic Chemist

NATA
WORLD RECOGNISED ACCREDITATION

NATA Corporate Accreditation Number 1261
The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement.
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Environmental Laboratories Industry Group

GLOSSARY OF TERMS

UNITS

mg/kg	milligrams per Kilogram	**mg/l**	milligrams per litre
ug/l	micrograms per litre	**ppm**	Parts per million
ppb	Parts per billion	**%**	Percentage
org/100ml	Organisms per 100 millilitres	**NTU**	Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates	Results <10 times the LOR : No Limit Results between 10-20 times LOR : RPD must lie between 0-50% Results >20 times LOR : RPD must lie between 0-20%
LCS Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-130%

GENERAL COMMENTS

1. All results in this report supersede any previously corresponded results.
2. All soil results are reported on a dry basis.
3. Samples are analysed on an as received basis.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR this is due to either Matrix Interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Orgaonchlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
7. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
8. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
9. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

REPORT SPECIFIC NOTES

NATA
WORLD RECOGNISED ACCREDITATION

Environmental Laboratory
Air Analysis
Water Analysis
Soil Contamination Analysis

NATA Accreditation
Stack Emission Sampling & Analysis
Trade Waste Sampling & Analysis
Groundwater Sampling & Analysis

35Years of Environmental Analysis & Experience – fully Australian Owned

Environmental Laboratories Industry Group

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

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Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 266323
Phone: 9653 1234
Fax: 9654 7117

Received: May 31, 2010 12:00
Due: Jun 7, 2010 05:45
Priority: 5 Day
Contact name: Eric Pritchard

Client Job No.: 60156173

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorous Pesticides	EPA Screen Soil IWRG621	Total Recoverable Hydrocarbons	SPOCAS (Acid Sulphate Soils)
Laboratory where analysis is conducted																							
Melbourne Laboratory - NATA Site #1254					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site #18217																							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																			
TP24_0.5-0.6	May 28, 2010		Soil	M10-MY15740	X																X		X
TP25_0.1-0.2	May 28, 2010		Soil	M10-MY15741	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
TP25_0.5-0.6	May 28, 2010		Soil	M10-MY15742	X																		X
SP30	May 28, 2010		Soil	M10-MY15743	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
SP31	May 28, 2010		Soil	M10-MY15744	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	

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AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Total Recoverable Hydrocarbons						
TRH C6-C9 Fraction by GC	20	mg/kg	-	< 20	< 20	-
TRH C10-C14 Fraction by GC	50	mg/kg	-	< 50	< 50	-
TRH C15-C28 Fraction by GC	100	mg/kg	-	< 100	< 100	-
TRH C29-C36 Fraction by GC	100	mg/kg	-	< 100	< 100	-
Monocyclic Aromatic Hydrocarbons						
Benzene	0.05	mg/kg	-	< 0.05	-	-
Toluene	0.05	mg/kg	-	< 0.05	-	-
Ethylbenzene	0.05	mg/kg	-	< 0.05	-	-
Xylenes(ortho.meta and para)	0.05	mg/kg	-	< 0.05	-	-
Fluorobenzene (surr.)	1	%	-	83	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.1	mg/kg	-	< 0.1	< 0.1	-
Acenaphthylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Anthracene	0.1	mg/kg	-	< 0.1	< 0.1	-
Benz(a)anthracene	0.1	mg/kg	-	< 0.1	< 0.1	-
Benzo(a)pyrene	0.1	mg/kg	-	< 0.1	< 0.1	-
Benzo(b)fluoranthene	0.1	mg/kg	-	< 0.1	< 0.1	-
Benzo(g.h.i)perylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Benzo(k)fluoranthene	0.1	mg/kg	-	< 0.1	< 0.1	-
Chrysene	0.1	mg/kg	-	< 0.1	< 0.1	-
Dibenz(a.h)anthracene	0.1	mg/kg	-	< 0.1	< 0.1	-
Fluoranthene	0.1	mg/kg	-	< 0.1	< 0.1	-
Fluorene	0.1	mg/kg	-	< 0.1	< 0.1	-
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	-	< 0.1	< 0.1	-
Naphthalene	0.1	mg/kg	-	< 0.1	< 0.1	-
Phenanthrene	0.1	mg/kg	-	< 0.1	< 0.1	-
Pyrene	0.1	mg/kg	-	< 0.1	< 0.1	-
Total PAH	0.1	mg/kg	-	< 0.1	< 0.1	-
p-Terphenyl-d14 (surr.)	1	%	-	101	90	-
2-Fluorobiphenyl (surr.)	1	%	-	100	92	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Organochlorine Pesticides						
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Chlordane	0.1	mg/kg	-	< 0.1	< 0.1	-
d-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Toxophene	0.1	mg/kg	-	< 0.1	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	147	128	-
Tetrachloro-m-xylene (surr.)	1	%	-	142	147	-
Chlorinated Hydrocarbons						
1.2-Dichlorobenzene	0.2	mg/kg	-	< 0.2	-	-
1.2.3-Trichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.2.3.4-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.2.3.5-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
1.2.4-Trichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.2.4.5-Tetrachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.3-Dichlorobenzene	0.2	mg/kg	-	< 0.2	-	-
1.3.5-Trichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.4-Dichlorobenzene	0.2	mg/kg	-	< 0.2	-	-
Benzal chloride	0.05	mg/kg	-	< 0.05	-	-
Benzotrichloride	0.05	mg/kg	-	< 0.05	-	-
Benzyl chloride	0.2	mg/kg	-	< 0.2	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobutadiene	0.05	mg/kg	-	< 0.05	-	-
Hexachlorocyclopentadiene	0.05	mg/kg	-	< 0.05	-	-
Hexachloroethane	0.05	mg/kg	-	< 0.05	-	-
Pentachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Dibutylchlorendate (surr.)	1	%	-	147	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	142	-	-
Organophosphorous Pesticides						
Bolstar	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
Diazinon	0.2	mg/kg	-	-	< 0.2	-
Dichlorvos	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 0.2	-
Methyl azinphos	0.2	mg/kg	-	-	< 0.2	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Naled	0.5	mg/kg	-	-	< 0.5	-
Phorate	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	94	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	-
Total PCB	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	147	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	142	-	-
Phenols						
2-Chlorophenol	0.2	mg/kg	-	< 0.2	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	-	-
2-Nitrophenol	0.5	mg/kg	-	< 0.5	-	-
2.4-Dichlorophenol	0.2	mg/kg	-	< 0.2	-	-
2.4-Dimethylphenol	0.2	mg/kg	-	< 0.2	-	-
2.4.6-Trichlorophenol	0.2	mg/kg	-	< 0.2	-	-
2.6-Dichlorophenol	0.2	mg/kg	-	< 0.2	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	-	-
4-Chloro-3-methylphenol	0.2	mg/kg	-	< 0.2	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Pentachlorophenol	0.5	mg/kg	-	< 0.5	-	-
Phenol	0.2	mg/kg	-	< 0.2	-	-
Phenol-d6 (surr.)	1	%	-	104	-	-
Halogenated Volatile Organics						
1.1-Dichloroethane	0.05	mg/kg	-	< 0.05	-	-
1.1-Dichloroethene	0.05	mg/kg	-	< 0.05	-	-
1.1.1-Trichloroethane	0.05	mg/kg	-	< 0.05	-	-
1.1.1.2-Tetrachloroethane	0.05	mg/kg	-	< 0.05	-	-
1.1.2-Trichloroethane	0.05	mg/kg	-	< 0.05	-	-
1.1.2.2-Tetrachloroethane	0.05	mg/kg	-	< 0.05	-	-
1.2-Dibromoethane	0.05	mg/kg	-	< 0.05	-	-
1.2-Dichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.2-Dichloroethane	0.05	mg/kg	-	< 0.05	-	-
1.2-Dichloropropane	0.05	mg/kg	-	< 0.05	-	-
1.2.3-Trichloropropane	0.05	mg/kg	-	< 0.05	-	-
1.3-Dichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
1.3-Dichloropropane	0.05	mg/kg	-	< 0.05	-	-
1.4-Dichlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Bromodichloromethane	0.05	mg/kg	-	< 0.05	-	-
Bromoform	0.05	mg/kg	-	< 0.05	-	-
Bromomethane	0.05	mg/kg	-	< 0.05	-	-
Carbon Tetrachloride	0.05	mg/kg	-	< 0.05	-	-
Chlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Chloroform	0.05	mg/kg	-	< 0.05	-	-
Chloromethane	0.05	mg/kg	-	< 0.05	-	-
cis-1.2-Dichloroethene	0.05	mg/kg	-	< 0.05	-	-
cis-1.3-Dichloropropene	0.05	mg/kg	-	< 0.05	-	-
Dibromochloromethane	0.05	mg/kg	-	< 0.05	-	-
Dibromomethane	0.05	mg/kg	-	< 0.05	-	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Iodomethane	0.05	mg/kg	-	< 0.05	-	-
Methylene chloride	0.05	mg/kg	-	< 0.05	-	-
Tetrachloroethene	0.05	mg/kg	-	< 0.05	-	-
trans-1.2-Dichloroethene	0.05	mg/kg	-	< 0.05	-	-
trans-1.3-Dichloropropene	0.05	mg/kg	-	< 0.05	-	-
Trichloroethene	0.05	mg/kg	-	< 0.05	-	-
Trichlorofluoromethane	0.05	mg/kg	-	< 0.05	-	-
Vinyl chloride	0.05	mg/kg	-	< 0.05	-	-
Fluorobenzene (surr.)	1	%	-	83	-	-
Volatile Organics						
Styrene	0.05	mg/kg	-	< 0.05	-	-
% Moisture	0.1	%	27	19	24	21
Chromium (hexavalent)	1	mg/kg	-	< 1	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
Fluoride	100	mg/kg	-	570	-	-
pH (1:5 Aqueous extract)	0.1	units	-	6.4	-	-
Acidity Trail						
Acid trail - Titratable Actual Acidity	2	mol H+/t	39	31	-	21
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	69	31	-	21
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	30	< 2	-	< 2
sulfidic - Titratable Actual Acidity	0.02	% pyrite S	0.06	0.05	-	0.03
sulfidic - Titratable Peroxide Acidity	0.02	% pyrite S	0.11	0.05	-	0.03
sulfidic - Titratable Sulfidic Acidity	0.02	% pyrite S	0.05	< 0.02	-	< 0.02
Sulfur trail						
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	< 10	< 10	-	11
Sulfur - KCl Extractable	0.02	% S	< 0.02	< 0.02	-	< 0.02
Sulfur - Peroxide	0.02	% S	0.02	0.02	-	0.02
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	< 0.02	< 0.02	-	0.02

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
pH Measurements						
pH-KCL	0.1	units	5.6	5.8	-	4.9
pH-OX	0.1	units	5.3	5.7	-	4.3
Calcium Values						
Acid Reacted Calcium	0.02	% Ca	< 0.02	< 0.02	-	0.04
acidity - Acid Reacted Calcium	10	mol H+/t	< 10	< 10	-	20
Calcium - KCl Extractable	0.02	% Ca	0.11	0.10	-	0.13
Calcium - Peroxide	0.02	% Ca	0.11	0.10	-	0.17
sulfidic - Acid Reacted Calcium	0.02	% S	< 0.02	< 0.02	-	0.03
Magnesium Values						
Acid Reacted Magnesium	0.02	% Mg	< 0.02	< 0.02	-	0.04
acidity - Acid Reacted Magnesium	10	mol H+/t	< 10	< 10	-	35
Magnesium - KCl Extractable	0.02	% Mg	0.23	0.15	-	0.17
Magnesium- Peroxide	0.02	% Mg	0.23	0.15	-	0.22
sulfidic - Acid Reacted Magnesium	0.02	% S	< 0.02	< 0.02	-	0.06
Acid Base Accounting (SPOCAS)						
ANC Fineness Factor	0.5		1.5	1.5	-	1.5
Liming rate - SPOCAS	1	kg CaCO3/t	1.9	1.9	-	1.6
Net Acidity (acidity units) - SPOCAS	10	mol H+/t	26	25	-	21
Net Acidity (sulfur units) - SPOCAS	0.02	% S	0.04	0.04	-	0.03
Heavy Metals						
Arsenic	2	mg/kg	-	3.5	< 2	-
Cadmium	0.5	mg/kg	-	< 0.5	< 0.5	-
Chromium	5	mg/kg	-	27	41	-
Copper	5	mg/kg	-	8.3	17	-
Lead	5	mg/kg	-	8.3	9.3	-
Molybdenum	10	mg/kg	-	< 10	< 10	-
Nickel	5	mg/kg	-	5.2	14	-
Selenium	2	mg/kg	-	< 2	< 2	-

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**TP22_0.5-0.7**	**TP24_0.5-0.6**	**TP25_0.1-0.2**	**TP25_0.5-0.6**
	Lab Number		**O10-JN00225**	**O10-MY15740**	**O10-MY15741**	**O10-MY15742**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**				
Silver	5	mg/kg	-	< 5	< 5	-
Tin	10	mg/kg	-	< 10	< 10	-
Zinc	5	mg/kg	-	< 5	11	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne	**Client Sample ID**		**SP30**	**SP31**
Level 9, 8 Exhibition St	**Lab Number**		**O10-MY15743**	**O10-MY15744**
Melbourne	**Matrix**		**Soil**	**Soil**
Victoria 3004	**Sample Date**		**May 28, 2010**	**May 28, 2010**
Analysis Type	**LOR**	**Units**		
Total Recoverable Hydrocarbons				
TRH C6-C9 Fraction by GC	20	mg/kg	< 20	< 20
TRH C10-C14 Fraction by GC	50	mg/kg	< 50	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	0.1	mg/kg	< 0.1	< 0.1
Anthracene	0.1	mg/kg	< 0.1	< 0.1
Benz(a)anthracene	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	0.1	mg/kg	< 0.1	< 0.1
Benzo(g.h.i)perylene	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	0.1	mg/kg	< 0.1	< 0.1
Chrysene	0.1	mg/kg	< 0.1	< 0.1
Dibenz(a.h)anthracene	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	0.1	mg/kg	< 0.1	< 0.1
Fluorene	0.1	mg/kg	< 0.1	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	< 0.1	< 0.1
Naphthalene	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	0.1	mg/kg	< 0.1	< 0.1
Pyrene	0.1	mg/kg	< 0.1	< 0.1
Total PAH	0.1	mg/kg	< 0.1	< 0.1
p-Terphenyl-d14 (surr.)	1	%	89	93
2-Fluorobiphenyl (surr.)	1	%	92	93
Organochlorine Pesticides				
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne Level 9, 8 Exhibition St Melbourne Victoria 3004	Client Sample ID		SP30	SP31
	Lab Number		O10-MY15743	O10-MY15744
	Matrix		Soil	Soil
	Sample Date		May 28, 2010	May 28, 2010
Analysis Type	**LOR**	**Units**		
b-BHC	0.05	mg/kg	< 0.05	< 0.05
Chlordane	0.1	mg/kg	< 0.1	< 0.1
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxophene	0.1	mg/kg	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	125	131
Tetrachloro-m-xylene (surr.)	1	%	130	148
Organophosphorous Pesticides				
Bolstar	0.2	mg/kg	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne Level 9, 8 Exhibition St Melbourne Victoria 3004	Client Sample ID		SP30	SP31
	Lab Number		O10-MY15743	O10-MY15744
	Matrix		Soil	Soil
	Sample Date		May 28, 2010	May 28, 2010
Analysis Type	**LOR**	**Units**		
Fenthion	0.2	mg/kg	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2
Methyl azinphos	0.2	mg/kg	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2
Naled	0.5	mg/kg	< 0.5	< 0.5
Phorate	0.2	mg/kg	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	82	83
% Moisture	0.1	%	14	8.0
Heavy Metals				
Arsenic	2	mg/kg	2.4	< 2
Cadmium	0.5	mg/kg	< 0.5	< 0.5
Chromium	5	mg/kg	17	10
Copper	5	mg/kg	8.6	9.2
Lead	5	mg/kg	7.4	< 5
Molybdenum	10	mg/kg	< 10	< 10
Nickel	5	mg/kg	5.6	5.8
Selenium	2	mg/kg	< 2	< 2
Silver	5	mg/kg	< 5	< 5
Tin	10	mg/kg	< 10	< 10
Zinc	5	mg/kg	13	5.9
Mercury	0.1	mg/kg	< 0.1	< 0.1

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**TP24_0.5-0.6**	**TP24_0.5-0.6**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**10-MY15740**	**10-MY15740**	**10-MY15740**	**10-MY15740**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Chromium (hexavalent)		< 1	< 1	< 1	92	82	< 1
Fluoride		290	340	16	88	-	< 100
pH (1:5 Aqueous extract)		6.4	6.4	-	-	-	-
Total Recoverable Hydrocarbons		Batch	Batch	Batch	Batch		
TRH C6-C9 Fraction by GC		< 20	< 20	< 1	84	100	< 20
TRH C10-C14 Fraction by GC		< 50	< 50	< 1	97	94	< 50
TRH C15-C28 Fraction by GC		< 100	< 100	< 1	-	-	< 100
TRH C29-C36 Fraction by GC		< 100	< 100	< 1	-	-	< 100
Monocyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Benzene		< 0.05	< 0.05	< 1	119	104	< 0.05
Toluene		< 0.05	< 0.05	< 1	99	101	< 0.05
Ethylbenzene		< 0.05	< 0.05	< 1	102	109	< 0.05
Xylenes(ortho.meta and para)		< 0.05	< 0.05	< 1	102	99	< 0.05
Polycyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Acenaphthene		< 0.1	< 0.1	< 1	105	90	< 0.1
Acenaphthylene		< 0.1	< 0.1	< 1	106	96	< 0.1
Anthracene		< 0.1	< 0.1	< 1	105	101	< 0.1
Benz(a)anthracene		< 0.1	< 0.1	< 1	102	92	< 0.1
Benzo(a)pyrene		< 0.1	< 0.1	< 1	95	97	< 0.1
Benzo(b)fluoranthene		< 0.1	< 0.1	< 1	94	95	< 0.1
Benzo(g.h.i)perylene		< 0.1	< 0.1	< 1	100	80	< 0.1
Benzo(k)fluoranthene		< 0.1	< 0.1	< 1	107	94	< 0.1
Chrysene		< 0.1	< 0.1	< 1	105	92	< 0.1
Dibenz(a.h)anthracene		< 0.1	< 0.1	< 1	98	92	< 0.1
Fluoranthene		< 0.1	< 0.1	< 1	103	89	< 0.1
Fluorene		< 0.1	< 0.1	< 1	104	93	< 0.1
Indeno(1.2.3-cd)pyrene		< 0.1	< 0.1	< 1	98	91	< 0.1
Naphthalene		< 0.1	< 0.1	< 1	104	92	< 0.1
Phenanthrene		< 0.1	< 0.1	< 1	104	96	< 0.1

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

Client Sample		**TP24_0.5-0.6**	**TP24_0.5-0.6**	**RPD**	**SPIKE**	**LCS**	**Method blank**
Lab Number		**10-MY15740**	**10-MY15740**	**10-MY15740**	**10-MY15740**	**Batch**	**Batch**
QA Description			**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Polycyclic Aromatic Hydrocarbons		Batch	Batch	Batch	Batch		
Pyrene		< 0.1	< 0.1	< 1	103	88	< 0.1
Organochlorine Pesticides		Batch	Batch	Batch	Batch		
4.4'-DDD		< 0.05	< 0.05	< 1	85	74	< 0.05
4.4'-DDE		< 0.05	< 0.05	< 1	81	85	< 0.05
4.4'-DDT		< 0.05	< 0.05	< 1	72	75	< 0.05
a-BHC		< 0.05	< 0.05	< 1	80	106	< 0.05
Aldrin		< 0.05	< 0.05	< 1	82	97	< 0.05
b-BHC		< 0.05	< 0.05	< 1	91	123	< 0.05
Chlordane		< 0.1	< 0.1	< 1	-	-	< 0.1
d-BHC		< 0.05	< 0.05	< 1	80	92	< 0.05
Dieldrin		< 0.05	< 0.05	< 1	85	86	< 0.05
Endosulfan I		< 0.05	< 0.05	< 1	80	89	< 0.05
Endosulfan II		< 0.05	< 0.05	< 1	74	78	< 0.05
Endosulfan sulphate		< 0.05	< 0.05	< 1	76	70	< 0.05
Endrin		< 0.05	< 0.05	< 1	73	73	< 0.05
Endrin aldehyde		< 0.05	< 0.05	< 1	77	78	< 0.05
Endrin ketone		< 0.05	< 0.05	< 1	122	105	< 0.05
g-BHC (Lindane)		< 0.05	< 0.05	< 1	80	99	< 0.05
Heptachlor		< 0.05	< 0.05	< 1	75	90	< 0.05
Heptachlor epoxide		< 0.05	< 0.05	< 1	85	103	< 0.05
Methoxychlor		< 0.05	< 0.05	< 1	72	74	< 0.05
Toxophene		< 0.1	< 0.1	< 1	-	-	< 0.1
Chlorinated Hydrocarbons		Batch	Batch	Batch	Batch		
1.2-Dichlorobenzene		< 0.2	< 0.2	< 1	100	85	< 0.2
1.2.3-Trichlorobenzene		< 0.05	< 0.05	< 1	88	82	< 0.05
1.2.3.4-Tetrachlorobenzene		< 0.05	< 0.05	< 1	89	84	< 0.05
1.2.3.5-Tetrachlorobenzene		< 0.05	< 0.05	< 1	-	90	< 0.05
1.2.4-Trichlorobenzene		< 0.05	< 0.05	< 1	-	104	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

Client Sample		**TP24_0.5-0.6**	**TP24_0.5-0.6**	**RPD**	**SPIKE**	**LCS**	**Method blank**
Lab Number		**10-MY15740**	**10-MY15740**	**10-MY15740**	**10-MY15740**	**Batch**	**Batch**
QA Description			**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Chlorinated Hydrocarbons		Batch	Batch	Batch	Batch		
1.2.4.5-Tetrachlorobenzene		< 0.05	< 0.05	< 1	107	122	< 0.05
1.3-Dichlorobenzene		< 0.2	< 0.2	< 1	81	73	< 0.2
1.3.5-Trichlorobenzene		< 0.05	< 0.05	< 1	100	88	< 0.05
1.4-Dichlorobenzene		< 0.2	< 0.2	< 1	107	87	< 0.2
Benzal chloride		< 0.05	< 0.05	< 1	-	103	< 0.05
Benzotrichloride		< 0.05	< 0.05	< 1	-	92	< 0.05
Benzyl chloride		< 0.2	< 0.2	< 1	-	-	< 0.2
Hexachlorobenzene		< 0.05	< 0.05	< 1	84	91	< 0.05
Hexachlorobutadiene		< 0.05	< 0.05	< 1	97	88	< 0.05
Hexachlorocyclopentadiene		< 0.05	< 0.05	< 1	-	78	< 0.05
Hexachloroethane		< 0.05	< 0.05	< 1	100	81	< 0.05
Pentachlorobenzene		< 0.05	< 0.05	< 1	107	-	< 0.05
Polychlorinated Biphenyls		Batch	Batch	Batch			
Aroclor-1016		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1221		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1232		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1242		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1248		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1254		< 0.1	< 0.1	< 1	-	-	< 0.1
Aroclor-1260		< 0.1	< 0.1	< 1	-	94	< 0.1
Total PCB		< 0.5	< 0.1	< 1	-	94	< 0.1
Phenols		Batch	Batch	Batch	Batch		
2-Chlorophenol		< 0.2	< 0.2	< 1	104	92	< 0.2
2-Methylphenol (o-Cresol)		< 0.2	< 0.2	< 1	-	95	< 0.2
2-Nitrophenol		< 0.5	< 0.5	< 1	-	78	< 0.5
2.4-Dichlorophenol		< 0.2	< 0.2	< 1	87	92	< 0.2
2.4-Dimethylphenol		< 0.2	< 0.2	< 1	103	96	< 0.2
2.4.6-Trichlorophenol		< 0.2	< 0.2	< 1	77	84	< 0.2

COMMENTS:

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

Client Sample		**TP24_0.5-0.6**	**TP24_0.5-0.6**	**RPD**	**SPIKE**	**LCS**	**Method blank**
Lab Number		**10-MY15740**	**10-MY15740**	**10-MY15740**	**10-MY15740**	**Batch**	**Batch**
QA Description			**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Phenols		Batch	Batch	Batch	Batch		
2.6-Dichlorophenol		< 0.2	< 0.2	< 1	104	90	< 0.2
3&4-Methylphenol (m&p-Cresol)		< 0.4	< 0.4	< 1	103	97	< 0.4
4-Chloro-3-methylphenol		< 0.2	< 0.2	< 1	91	95	< 0.2
Pentachlorophenol		< 0.5	< 0.5	< 1	59	59	< 0.5
Phenol		< 0.2	< 0.2	< 1	102	94	< 0.2
Halogenated Volatile Organics		Batch	Batch	Batch	Batch		
1.1-Dichloroethane		< 0.05	< 0.05	< 1	101	101	< 0.05
1.1-Dichloroethene		< 0.05	< 0.05	< 1	106	102	< 0.05
1.1.1-Trichloroethane		< 0.05	< 0.05	< 1	94	101	< 0.05
1.1.1.2-Tetrachloroethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.1.2-Trichloroethane		< 0.05	< 0.05	< 1	104	-	< 0.05
1.1.2.2-Tetrachloroethane		< 0.05	< 0.05	< 1	120	-	< 0.05
1.2-Dibromoethane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.2-Dichlorobenzene		< 0.05	< 0.05	< 1	107	-	< 0.05
1.2-Dichloroethane		< 0.05	< 0.05	< 1	103	88	< 0.05
1.2-Dichloropropane		< 0.05	< 0.05	< 1	102	94	< 0.05
1.2.3-Trichloropropane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.3-Dichlorobenzene		< 0.05	< 0.05	< 1	109	-	< 0.05
1.3-Dichloropropane		< 0.05	< 0.05	< 1	-	-	< 0.05
1.4-Dichlorobenzene		< 0.05	< 0.05	< 1	115	-	< 0.05
Bromodichloromethane		< 0.05	< 0.05	< 1	102	-	< 0.05
Bromoform		< 0.05	< 0.05	< 1	119	-	< 0.05
Bromomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Carbon Tetrachloride		< 0.05	< 0.05	< 1	101	94	< 0.05
Chlorobenzene		< 0.05	< 0.05	< 1	110	-	< 0.05
Chloroform		< 0.05	< 0.05	< 1	112	90	< 0.05
Chloromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
cis-1.2-Dichloroethene		< 0.05	< 0.05	< 1	-	-	< 0.05

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne

Victoria 3004

Client Sample		**TP24_0.5-0.6**	**TP24_0.5-0.6**	**RPD**	**SPIKE**	**LCS**	**Method blank**
Lab Number		**10-MY15740**	**10-MY15740**	**10-MY15740**	**10-MY15740**	**Batch**	**Batch**
QA Description			**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
Matrix		**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Date		**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Halogenated Volatile Organics		Batch	Batch	Batch	Batch		
cis-1.3-Dichloropropene		< 0.05	< 0.05	< 1	116	93	< 0.05
Dibromochloromethane		< 0.05	< 0.05	< 1	112	90	< 0.05
Dibromomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Iodomethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Methylene chloride		< 0.05	< 0.05	< 1	105	-	< 0.05
Tetrachloroethene		< 0.05	< 0.05	< 1	103	103	< 0.05
trans-1.2-Dichloroethene		< 0.05	< 0.05	< 1	93	106	< 0.05
trans-1.3-Dichloropropene		< 0.05	< 0.05	< 1	109	93	< 0.05
Trichloroethene		< 0.05	< 0.05	< 1	97	91	< 0.05
Trichlorofluoromethane		< 0.05	< 0.05	< 1	-	-	< 0.05
Vinyl chloride		< 0.05	< 0.05	< 1	-	-	< 0.05
Heavy Metals		Batch	Batch	Batch	Batch		
Arsenic		< 2	< 2	< 1	83	87	< 2
Cadmium		1.1	1.8	< 1	96	95	< 0.5
Chromium		< 5	< 5	19	92	92	< 5
Copper		46	60	26	99	101	< 5
Lead		< 5	< 5	< 1	91	95	< 5
Mercury		< 0.1	< 0.1	< 1	74	86	< 0.1
Molybdenum		< 10	< 10	27	92	90	< 10
Nickel		12	18	43	91	90	< 5
Selenium		< 2	< 2	< 1	81	81	< 2
Silver		9.2	12	15	98	101	< 5
Tin		< 10	< 10	< 1	95	94	< 10
Zinc		7.0	9.6	32	88	87	< 5
Volatile Organics		Batch	Batch	Batch			
Styrene		< 0.05	< 0.05	< 1	-	-	< 0.05

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**TP25_0.1-0.2**	**TP25_0.1-0.2**	**RPD**	**SPIKE**	**LCS**	**Method blank**
	Lab Number	**10-MY15741**	**10-MY15741**	**10-MY15741**	**10-MY15741**	**Batch**	**Batch**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**	**% Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**	**May 28, 2010**
Analysis Type	**Units**			% RPD	% Recovery	% Recovery	mg/L
Organophosphorous Pesticides		Batch	Batch	Batch	Batch		
Bolstar		< 0.2	< 0.2	< 1	-	-	< 0.2
Chlorpyrifos		< 0.2	< 0.2	< 1	-	96	< 0.2
Demeton-O		< 0.2	< 0.2	< 1	-	-	< 0.2
Diazinon		< 0.2	< 0.2	< 1	115	99	< 0.2
Dichlorvos		< 0.2	< 0.2	< 1	-	-	< 0.2
Disulfoton		< 0.2	< 0.2	< 1	-	-	< 0.2
Ethion		< 0.2	< 0.2	< 1	114	87	< 0.2
Ethoprop		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenitrothion		< 0.2	< 0.2	< 1	112	84	< 0.2
Fensulfothion		< 0.2	< 0.2	< 1	-	-	< 0.2
Fenthion		< 0.2	< 0.2	< 1	-	89	< 0.2
Merphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl azinphos		< 0.2	< 0.2	< 1	-	-	< 0.2
Methyl parathion		< 0.2	< 0.2	< 1	118	76	< 0.2
Mevinphos		< 0.2	< 0.2	< 1	109	-	< 0.2
Naled		< 0.5	< 0.5	< 1	-	-	< 0.5
Phorate		< 0.2	< 0.2	< 1	-	-	< 0.2
Ronnel		< 0.2	< 0.2	< 1	-	-	< 0.2
Tokuthion		< 0.2	< 0.2	< 1	-	-	< 0.2
Trichloronate		< 0.2	< 0.2	< 1	-	-	< 0.2

COMMENTS:

MGT Report # 269622

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: eric.pritchard@aecom.com

Laboratory Details
Lab. Name: ~~ALS~~ MGT
Lab. Address:
Contact Name:
Lab. Ref:
Tel: 85499600
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: GAA Berwick Waterways
Project Number: 60156173 / 1.01
Purchase Order Number: 60156173 / 1.01
Sample collected by: JH
Sample Results to be returned to: eric.pritchard@aecom.com

Specifications:

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr ____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☑ Email	☐ Yes	☐ No	☐ N/A

7. Report Format:
8. Project Manager:
tel:

Analysis Request

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	Acid sulphate soil (PASS)	PHE	PHFOX	SPOCAS SUITE	SCR SUITE	Remarks & comments
	MW01-1.0		5/7/10	x			x	x	x		1 bag	x	x	x			
	MW01-1.5		"	x			x	x	x		"	x	x	x			
	MW02-1.0		"	x			x	x	x		"	x	x	x			
	MW02-1.5		"	x			x	x	x		"	x	x	x			
	MW03-1.0		"	x			x	x	x		"	x	x	x			
	MW03-1.5		"	x			x		x		"	x	x	x			
	BH32-1.0		"	x			x	x	x		"	x	x	x			
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								

Relinquished By:	Received by:			
Name: J. Hume	Name: John	Received in good condition?	Yes/No/NA	Method of Shipment ☐ Courier ☐ Postal ☐ By Hand
Date: 5/7/10	Date: 6/7/10	Samples received chilled?	Yes/No/NA	Consignment Note No.
Time:	Time: 2.50pm		Yes/No/NA	Transport Co:
of:	of: MGT			
Relinquished By: Analysis	**Received by:**	Received in good condition?	Yes/No/NA	Method of Shipment ☐ Courier ☐ Postal ☐ By Hand
Name: J. Hume	Name:	Samples received chilled?	Yes/No/NA	Consignment Note No.
Date: 6/7/10	Date:		Yes/No/NA	Transport Co:
Time:	Time:			
of:	of:			

Form: AECOM

MGT Report # 269622

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: eric.pritchard@aecom.com

Laboratory Details
Lab. Name: ALS
Lab. Address:
Contact Name:
Lab. Ref:
Tel: 85499600
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: GAA Berwick Waterways
Project Number: 60156173 / 1.01
Purchase Order Number: 60156173 / 1.01
Sample collected by: JH
Sample Results to be returned to: eric.pritchard@aecom.com

Specifications:

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☑ Email	☐ Yes	☐ No	☐ N/A
7. Report Format:	8. Project Manager:		tel:

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filtered	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Acid sulphate soil assessment	pH F	pH Fox	SPOCAS Suite	SCR suite	Remarks & comments
	BH32 0.65	6/7/10		x			x		x		1 Bag	x	x	x			
	QC101	"		x			x	x	x		"	x	x				
	QC102	"		x			x	x	x		"	x	x				Please send to ALS (ensure sample kept frozen)
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								
				x			x	x	x								

Relinquished By:
Name: J. Home
Date: 6/7/10
Time:
of: AECOM.

Received by:
Name: John
Date: 2.30pm
Time: 6/7/10
of: MGT

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment: ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co:

Relinquished By: (Analysis)
Name: J Home
Date: 6/7/10
Time:
of:

Received by:
Name:
Date:
Time:
of:

Received in good condition? Yes/No/NA
Samples received chilled? Yes/No/NA
Method of Shipment: ☐ Courier ☐ Postal ☐ By Hand
Consignment Note No.
Transport Co:

Printed copies of this document are uncontrolled

mgt Environmental

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Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Sample Receipt Advice

Company name: **AECOM Aust P/L Melbourne**

Contact name: Jennifer Hume
Client job number: GAA BERWICK WATERWAYS 60156173/1.01
COC number: Not provided
Turn around time: 5 Day
Date received: Jul 6, 2010
MGT lab reference: **269622**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☑ Samples received with Zero Headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Rhonda Chouman on Phone : (03) 9564 7055 or by e.mail: rchouman@mgtenv.com.au

Results will be delivered electronically via e.mail to Jennifer Hume - jennifer.hume@aecom.com.

mgt Sample Receipt

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 269622
Phone: 9653 1234
Fax: 9654 7117

Received: Jul 6, 2010 12:00
Due: Jul 13, 2010 11:04
Priority: 5 Day
Contact name: Jennifer Hume

Client Job No.: GAA BERWICK WATERWAYS
60156173/1.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	pH-F (Field pH test)	pH-FOX (Field pH Peroxide test)
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1254					X	X	X
Sydney Laboratory - NATA Site #18217							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
MW01_1.0	Jul 05, 2010		Soil	O10-JL02255	X	X	X
MW01_1.5	Jul 05, 2010		Soil	O10-JL02256	X	X	X
MW02_1.0	Jul 05, 2010		Soil	O10-JL02257	X	X	X
MW02_1.5	Jul 05, 2010		Soil	O10-JL02258	X	X	X
MW03_1.0	Jul 05, 2010		Soil	O10-JL02259	X	X	X
MW03_1.5	Jul 05, 2010		Soil	O10-JL02260	X	X	X
BH32_1.0	Jul 05, 2010		Soil	O10-JL02261	X	X	X
BH32_0.65	Jul 05, 2010		Soil	O10-JL02262	X	X	X
QC101	Jul 05, 2010		Soil	O10-JL02263	X	X	X

mgt Environmental

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Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne
Victoria 3004
Site: GAA BERWICK WATERWAYS 60156173/1.01

Order Number:
Date Received: Jul 06, 2010
Date Sampled: Jul 5, 2010
Date Reported: Jul 27, 2010
Contact: Gemma Williams

Methods

- Method 102 - ANZECC - % Moisture
- Acid sulphate Soils Guideline Series May 2006 (Field test conducted in Lab)

Comments

Notes

Authorised

Report Number: 269622-V2

Michael Wright
Senior Principal Chemist
NATA Signatory

Rhonda Chouman
Client Manager
NATA Signatory

Andrew Cook
Chief Inorganic Chemist

NATA
WORLD RECOGNISED ACCREDITATION

NATA Corporate Accreditation Number 1261
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Environmental Laboratories Industry Group

GLOSSARY OF TERMS

UNITS

mg/kg	milligrams per Kilogram	**mg/l**	milligrams per litre
ug/l	micrograms per litre	**ppm**	Parts per million
ppb	Parts per billion	**%**	Percentage
org/100ml	Organisms per 100 millilitres	**NTU**	Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates	Results <10 times the LOR : No Limit Results between 10-20 times LOR : RPD must lie between 0-50% Results >20 times LOR : RPD must lie between 0-20%
LCS Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
CRM Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-130%

GENERAL COMMENTS

1. All results in this report supersede any previously corresponded results.
2. All soil results are reported on a dry basis.
3. Samples are analysed on an as received basis.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR this is due to either Matrix Interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Orgaonchlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
7. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
8. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
9. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

REPORT SPECIFIC NOTES

NATA
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Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 269622
Phone: 9653 1234
Fax: 9654 7117

Received: Jul 6, 2010 12:00
Due: Jul 13, 2010 11:04
Priority: 5 Day
Contact name: Jennifer Hume

Client Job No.: GAA BERWICK WATERWAYS
60156173/1.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	pH-F (Field pH test)	pH-FOX (Field pH Peroxide test)
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1254					X	X	X
Sydney Laboratory - NATA Site #18217							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
MW01_1.0	Jul 05, 2010		Soil	O10-JL02255	X	X	X
MW01_1.5	Jul 05, 2010		Soil	O10-JL02256	X	X	X
MW02_1.0	Jul 05, 2010		Soil	O10-JL02257	X	X	X
MW02_1.5	Jul 05, 2010		Soil	O10-JL02258	X	X	X
MW03_1.0	Jul 05, 2010		Soil	O10-JL02259	X	X	X
MW03_1.5	Jul 05, 2010		Soil	O10-JL02260	X	X	X
BH32_1.0	Jul 05, 2010		Soil	O10-JL02261	X	X	X
BH32_0.65	Jul 05, 2010		Soil	O10-JL02262	X	X	X
QC101	Jul 05, 2010		Soil	O10-JL02263	X	X	X

Melbourne
3-5 Kingston Town Close
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NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**MW01_1.0**	**MW01_1.5**	**MW02_1.0**	**MW02_1.5**
	Lab Number		**O10-JL02255**	**O10-JL02256**	**O10-JL02257**	**O10-JL02258**
	Matrix		**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date		**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**LOR**	**Units**				
% Moisture	0.1	%	23	23	26	27
pH-F (Field pH test)	0.1	units	5.7	5.5	6.9	7.2
pH-FOX (Field pH Peroxide test)	0.1	units	3.9	3.9	5.3	5.5
Reaction Ratings	0	comment	Low	Low	Low	Low

COMMENTS:

Melbourne
3-5 Kingston Town Close
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Phone : 03 9564 7055
NATA Site # 1254

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Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne	**Client Sample ID**		**MW03_1.0**	**MW03_1.5**	**BH32_1.0**	**BH32_0.65**
Level 9, 8 Exhibition St	**Lab Number**		**O10-JL02259**	**O10-JL02260**	**O10-JL02261**	**O10-JL02262**
Melbourne	**Matrix**		**Soil**	**Soil**	**Soil**	**Soil**
Victoria 3004	**Sample Date**		**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**LOR**	**Units**				
% Moisture	0.1	%	22	19	26	23
pH-F (Field pH test)	0.1	units	6.6	6.4	6.5	6.0
pH-FOX (Field pH Peroxide test)	0.1	units	4.7	4.8	4.7	4.3
Reaction Ratings	0	comment	Low	X-extreme	Low	Medium

COMMENTS:

AECOM Aust P/L Melbourne	**Client Sample ID**		**QC101**
Level 9, 8 Exhibition St	**Lab Number**		**O10-JL02263**
Melbourne	**Matrix**		**Soil**
Victoria 3004	**Sample Date**		**Jul 5, 2010**
Analysis Type	**LOR**	**Units**	
% Moisture	0.1	%	23
pH-F (Field pH test)	0.1	units	6.0
pH-FOX (Field pH Peroxide test)	0.1	units	4.2
Reaction Ratings	0	comment	Medium

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**BH32_1.0**	**BH32_1.0**	**RPD**	**SPIKE**
	Lab Number	**10-JL02261**	**10-JL02261**	**10-JL02261**	**10-JL02261**
	QA Description		**Duplicate**	**Duplicate % RPD**	**Spike % Recovery**
	Matrix	**Soil**	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**Units**			% RPD	% Recovery
pH-F (Field pH test)		5.8	5.6	2.0	-
pH-FOX (Field pH Peroxide test)		4.1	4.1	< 1	-

COMMENTS:

Enquiries

From: Pritchard, Eric [Eric.Pritchard@aecom.com]
Sent: Tuesday, 13 July 2010 4:22 PM
To: Sample Receipt 2
Cc: Rhonda Chouman
Subject: Additional analysis batch 269622

Hi,

I would like to request additional analysis for MGT batch 269622:

Sample MW01-1.0: S_{CR} suite and SPOCAS suite ✓ JL02255
Sample MW01-1.5: S_{CR} suite JL2256
Sample BH32_0.65: S_{CR} suite - JL02262

Also note that samples BH32_0.65 should be relabeled BH33_0.65. Can you please amend report 269622 to reflect this?

Thanks,

Eric Pritchard
Professional Geologist
D +61 3 9653 8039 M +61 419 714 321
Eric.Pritchard@aecom.com

AECOM
Level 45, 80 Collins Street, Melbourne, VIC 3000
T +61 3 9653 1234 F +61 3 9654 7117
www.aecom.com

Recieved by: Robyn
Rep: 270445

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GAA BERWICK WATERWAYS 60156173/1.01

Enquiries

From: Pritchard, Eric [Eric.Pritchard@aecom.com]
Sent: Wednesday, 14 July 2010 2:45 PM
To: Enquiries
Subject: Attention Robin: RE: Additional analysis batch 269622

As discussed, the second sample for analysis should read:

MW01_1.5 for S_{CR} suite, not MW01_1.0.

Thanks again,

Eric

Eric Pritchard
Professional Geologist
D +61 3 9653 8039 M +61 419 714 321
Eric.Pritchard@aecom.com

AECOM
Level 45, 80 Collins Street, Melbourne, VIC 3000
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www.aecom.com

Please consider the environment before printing this email.

From: Pritchard, Eric
Sent: Tuesday, 13 July 2010 4:22 PM
To: 'sample_receipt_2@mgtenv.com.au'
Cc: 'Rhonda Chouman'
Subject: Additional analysis batch 269622

Hi,

I would like to request additional analysis for MGT batch 269622:

Sample MW01-1.0: S_{CR} suite and SPOCAS suite
Sample MW01-1.0: S_{CR} suite
Sample BH32_0.65: S_{CR} suite

Also note that samples BH32_0.65 should be relabeled BH33_0.65. Can you please amend report 269622 to reflect this?

Thanks,

Eric Pritchard
Professional Geologist
D +61 3 9653 8039 M +61 419 714 321
Eric.Pritchard@aecom.com

AECOM
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Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Sample Receipt Advice

Company name: **AECOM Aust P/L Melbourne**

Contact name: Eric Pritchard
Client job number: GAA BERWICK WATERWAYS 60156173/1.01
COC number: Not provided
Turn around time: 5 Day
Date received: Jul 14, 2010
MGT lab reference: **270445**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Organic samples had Teflon liners.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Rhonda Chouman on Phone : (03) 9564 7055 or by e.mail: rchouman@mgtenv.com.au

Results will be delivered electronically via e.mail to Eric Pritchard - eric.pritchard@aecom.com.

mgt Sample Receipt

mgt Environmental

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Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 270445
Phone: 9653 1234
Fax: 9654 7117

Received: Jul 14, 2010 12:00
Due: Jul 21, 2010 02:54
Priority: 5 Day
Contact name: Eric Pritchard

Client Job No.: GAA BERWICK WATERWAYS
60156173/1.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	SPOCAS (Acid Sulphate Soils)	Chromium Suite
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1254					X	X	X
Sydney Laboratory - NATA Site #18217							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
MW01-1.0	Jul 05, 2010		Soil	O10-JL05284	X	X	X
MW01-1.5	Jul 05, 2010		Soil	O10-JL05285	X		X
BH32_0.65	Jul 05, 2010		Soil	O10-JL05286	X		X

mgt Environmental

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Phone : 08 8443 4430

CERTIFICATE OF ANALYSIS

AECOM Aust P/L Melbourne
Level 9, 8 Exhibition St
Melbourne
Victoria 3004
Site: GAA BERWICK WATERWAYS 60156173/1.01

Report Number: 270445-V1 Page 1 of 6
Order Number:
Date Received: Jul 14, 2010
Date Sampled: Jul 5, 2010
Date Reported: Jul 23, 2010
Contact: Eric Pritchard

Methods

- Method 102 - ANZECC - % Moisture
- Acid Sulphate Soils Laboratory Methods Guidelines, Version 2.1

Comments

Notes

Authorised

Report Number: 270445-V1

Michael Wright
Senior Principal Chemist
NATA Signatory

Rhonda Chouman
Client Manager
NATA Signatory

Orlando Scalzo
Chief Organic Chemist
NATA Signatory

Andrew Cook
Chief Inorganic Chemist

NATA
WORLD RECOGNISED ACCREDITATION

NATA Corporate Accreditation Number 1261
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Environmental Laboratories Industry Group

GLOSSARY OF TERMS

UNITS

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ppb	Parts per billion	**%**	Percentage
org/100ml	Organisms per 100 millilitres	**NTU**	Units

TERMS

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Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

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CRM Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Method Blanks	Not to exceed LOR
SPIKE Recoveries	Recoveries must lie between 70-130% - Phenols 30-130%
Surrogate Recoveries	Recoveries must lie between 50-150% - Phenols 20-130%

GENERAL COMMENTS

1. All results in this report supersede any previously corresponded results.
2. All soil results are reported on a dry basis.
3. Samples are analysed on an as received basis.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR this is due to either Matrix Interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Orgaonchlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
7. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
8. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
9. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

REPORT SPECIFIC NOTES

NATA
WORLD RECOGNISED ACCREDITATION

Environmental Laboratory
Air Analysis
Water Analysis
Soil Contamination Analysis

NATA Accreditation
Stack Emission Sampling & Analysis
Trade Waste Sampling & Analysis
Groundwater Sampling & Analysis

35Years of Environmental Analysis & Experience – fully Australian Owned

Environmental Laboratories Industry Group

mgt Environmental

ABN – 50 005 085 521 e.mail : mgt@mgtenv.com.au web : www.mgtenv.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

Company Name: AECOM Aust P/L Melbourne
Address: Level 9, 8 Exhibition St
Melbourne
Victoria 3004

Order No.:
Report #: 270445
Phone: 9653 1234
Fax: 9654 7117

Received: Jul 14, 2010 12:00
Due: Jul 21, 2010 02:54
Priority: 5 Day
Contact name: Eric Pritchard

Client Job No.: GAA BERWICK WATERWAYS
60156173/1.01

mgt Client Manager: Rhonda Chouman

Sample Detail					% Moisture	SPOCAS (Acid Sulphate Soils)	Chromium Suite
Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site #1254					X	X	X
Sydney Laboratory - NATA Site #18217							
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
MW01-1.0	Jul 05, 2010		Soil	O10-JL05284	X	X	X
MW01-1.5	Jul 05, 2010		Soil	O10-JL05285	X		X
BH32_0.65	Jul 05, 2010		Soil	O10-JL05286	X		X

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**MW01-1.0**	**MW01-1.5**	**BH32_0.65**
	Lab Number		**O10-JL05284**	**O10-JL05285**	**O10-JL05286**
	Matrix		**Soil**	**Soil**	**Soil**
	Sample Date		**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**LOR**	**Units**			
% Moisture	0.1	%	23	23	25
Acidity Trail					
Acid trail - Titratable Actual Acidity	2	mol H+/t	20	-	-
Acid trail - Titratable Peroxide Acidity	2	mol H+/t	20	-	-
Acid trail - Titratable Sulfidic Acidity	2	mol H+/t	< 2	-	-
sulfidic - Titratable Actual Acidity	0.02	% pyrite S	0.03	-	-
sulfidic - Titratable Peroxide Acidity	0.02	% pyrite S	0.03	-	-
sulfidic - Titratable Sulfidic Acidity	0.02	% pyrite S	< 0.02	-	-
Sulfur trail					
acidity - Peroxide Oxidisable Sulfur	10	mol H+/t	< 10	-	-
Sulfur - KCl Extractable	0.02	% S	0.02	-	-
Sulfur - Peroxide	0.02	% S	0.02	-	-
Sulfur - Peroxide Oxidisable Sulfur	0.02	% S	< 0.02	-	-
pH Measurements					
pH-KCL	0.1	units	5.2	-	-
pH-OX	0.1	units	5.1	-	-
Calcium Values					
Acid Reacted Calcium	0.02	% Ca	0.02	-	-
acidity - Acid Reacted Calcium	10	mol H+/t	< 10	-	-
Calcium - KCl Extractable	0.02	% Ca	0.11	-	-
Calcium - Peroxide	0.02	% Ca	0.13	-	-
sulfidic - Acid Reacted Calcium	0.02	% S	< 0.02	-	-
Magnesium Values					
Acid Reacted Magnesium	0.02	% Mg	0.02	-	-
acidity - Acid Reacted Magnesium	10	mol H+/t	14	-	-
Magnesium - KCl Extractable	0.02	% Mg	0.21	-	-
Magnesium- Peroxide	0.02	% Mg	0.22	-	-
sulfidic - Acid Reacted Magnesium	0.02	% S	0.02	-	-
Acid Base Accounting (Chromium Reducible Sulfur)					
ANC Fineness Factor	0.5		1.5	1.5	1.5
Net Acidity (acidity units) - CRS	10	mol H+/t	27	23	38

COMMENTS:

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**		**MW01-1.0**	**MW01-1.5**	**BH32_0.65**
	Lab Number		**O10-JL05284**	**O10-JL05285**	**O10-JL05286**
	Matrix		**Soil**	**Soil**	**Soil**
	Sample Date		**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**LOR**	**Units**			
Net Acidity (sulfur units) - CRS	0.02	% S	0.04	0.04	0.06
Chromium Suite					
pH-KCL	0.1	units	5.2	4.9	4.8
Chromium Reducible Sulfur	0.02	% S	< 0.02	< 0.02	0.02
Acid trail - Titratable Actual Acidity	2	mol H+/t	20	21	28
sulfidic - Titratable Actual Acidity	0.02	% pyrite S	0.03	0.03	0.05
Acid Base Accounting (SPOCAS)					
ANC Fineness Factor	0.5		1.5	-	-
Net Acidity (acidity units) - SPOCAS	10	mol H+/t	14	-	-
Net Acidity (sulfur units) - SPOCAS	0.02	% S	0.02	-	-

COMMENTS:

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : 03 9564 7055
NATA Site # 1254

Sydney
1a Chilvers Rd
Thornleigh NSW 2120
Phone : 02 9484 3300
NATA Site # 18217

Adelaide
140 Richmond Rd
Marleston SA 5033
Phone : 08 8443 4430

AECOM Aust P/L Melbourne **Level 9, 8 Exhibition St** **Melbourne** **Victoria 3004**	**Client Sample ID**	**RPD**	**SPIKE**	**Method blank**
	Lab Number	**Batch**	**Batch**	**Batch**
	QA Description		**Spike % Recovery**	
	Matrix	**Soil**	**Soil**	**Soil**
	Sample Date	**Jul 5, 2010**	**Jul 5, 2010**	**Jul 5, 2010**
Analysis Type	**Units**		% Recovery	mg/L
Acidity Trail				
Acid trail - Titratable Peroxide Acidity		-	-	< 2
Acid trail - Titratable Sulfidic Acidity		-	-	< 2
sulfidic - Titratable Peroxide Acidity		-	-	< 0.02
sulfidic - Titratable Sulfidic Acidity		-	-	< 0.02
Sulfur trail				
acidity - Peroxide Oxidisable Sulfur		-	-	< 10
Sulfur - KCl Extractable		-	-	< 0.02
Sulfur - Peroxide		-	-	< 0.02
Sulfur - Peroxide Oxidisable Sulfur		-	-	< 0.02
Calcium Values				
Acid Reacted Calcium		-	-	< 0.02
acidity - Acid Reacted Calcium		-	-	< 10
Calcium - KCl Extractable		-	-	< 0.02
Calcium - Peroxide		-	-	< 0.02
sulfidic - Acid Reacted Calcium		-	-	< 0.02
Magnesium Values				
Acid Reacted Magnesium		-	-	< 0.02
acidity - Acid Reacted Magnesium		-	-	< 10
Magnesium - KCl Extractable		-	-	< 0.02
Magnesium- Peroxide		-	-	< 0.02
sulfidic - Acid Reacted Magnesium		-	-	< 0.02
Chromium Suite				
Acid trail - Titratable Actual Acidity		-	-	< 2
sulfidic - Titratable Actual Acidity		-	-	< 0.02

COMMENTS:

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: EM1007486.

ADDRESS / OFFICE:

PROJECT MANAGER (PM):

PROJECT ID:

SITE:

P.O. NO.:

RESULTS REQUIRED (Date):

QUOTE NO.:

SAMPLER:

MOBILE:

PHONE:

EMAIL REPORT TO:

EMAIL INVOICE TO: (if different to report)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

Chilled: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

Attached.

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION	
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles
1	QC102.					

Environmental Division
Brisbane
Work Order
EB1012294

Telephone : +61-7-3243 7222

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name: M/C. Bryant	Date: 14/7/10	Con' Note No:
Of:	Time:	Of: ALS.	Time: 0925	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB1012294**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR ERIC PRITCHARD	Contact	: Greg Vogel
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: eric.pritchard@aecom.com	E-mail	: brisbane.enviro.services@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61 7 3243 7222
Facsimile	: +61 03 9654 7117	Facsimile	: +61 7 3243 7218
Project	: 60156173 1 01 GAA Berwick Waterways	Page	: 1 of 2
Order number	: 60156173/1.01		
C-O-C number	: ----	Quote number	: ES2010HLAENV0384 (EN/004/10)
Site	: ----		
Sampler	: JH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 14-JUL-2010	Issue Date	: 15-JUL-2010 11:15
Client Requested Due Date	: 21-JUL-2010	Scheduled Reporting Date	: **21-JUL-2010**

Delivery Details

Mode of Delivery	: Client Drop off	Temperature	: CHILLED - Ice present
No. of coolers/boxes	: REBATCH	No. of samples received	: 1
Sercurity Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Matt Goodwin.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EB1012294-001	06-JUL-2010 15:00	QC102	✓

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	Simonette.nibaldi@aecom.com

MR ERIC PRITCHARD

- *AU Certificate of Analysis - NATA (COA)	Email	eric.pritchard@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	eric.pritchard@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	eric.pritchard@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	eric.pritchard@aecom.com
- Chain of Custody (CoC) (COC)	Email	eric.pritchard@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	eric.pritchard@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	eric.pritchard@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	eric.pritchard@aecom.com
- EDI Format - XTab (XTAB)	Email	eric.pritchard@aecom.com

Craig Bryant

From: Samples Melbourne
Sent: Wednesday, 14 July 2010 9:25 AM
To: Samples Brisbane; Craig Bryant
Subject: FW: Additional analysis - batch EM1007486
Follow Up Flag: Follow up
Flag Status: Red

Hi Craig

Can you Pl take care about Eric Pritchard request? The sample was sent to you on 08/07/10

Regards,

Ranil Weerakkody
SAMPLE RECEIPT SUPERVISOR - VIC

ALS | Environmental (General Environmental Group)

Address
4 Westall Road
Springvale VIC 3171

PHONE +61 3 8549 9600
FAX +61 3 8549 9601

www.alsglobal.com

Please consider the environment before printing this email.

From: Pritchard, Eric [mailto:Eric.Pritchard@aecom.com]
Sent: Tuesday, 13 July 2010 4:24 PM
To: Samples Melbourne
Subject: Additional analysis - batch EM1007486

Hi,

I would like to request additional analysis for ALS batch EM1007486:

Sample QC102: S_{CR} suite

Thanks,

Eric Pritchard
Professional Geologist
D +61 3 9653 8039 M +61 419 714 321
Eric.Pritchard@aecom.com

AECOM
Level 45, 80 Collins Street, Melbourne, VIC 3000
T +61 3 9653 1234 F +61 3 9654 7117
www.aecom.com

Please consider the environment before printing this email.

Electronic communication, which includes any files or attachments thereto, contains proprietary or confidential information and may be

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1012294**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR ERIC PRITCHARD	Contact	: Greg Vogel
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: eric.pritchard@aecom.com	E-mail	: brisbane.enviro.services@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61 7 3243 7222
Facsimile	: +61 03 9654 7117	Facsimile	: +61 7 3243 7218
Project	: 60156173 1 01 GAA Berwick Waterways	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 60156173/1.01		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2010
Sampler	: JH	Issue Date	: 20-JUL-2010
Site	: ----		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Bne Acid Sulphate Soils

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ANC not required because pH KCl less than 6.5**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: PULP			Client sample ID	QC102	----	----	----	----
			Client sampling date / time	06-JUL-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1012294-001	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.0**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**26**	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.04**	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.010**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.05**	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**34**	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	**3**	----	----	----	----

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB1012294**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR ERIC PRITCHARD	Contact	: Greg Vogel
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: eric.pritchard@aecom.com	E-mail	: brisbane.enviro.services@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61 7 3243 7222
Facsimile	: +61 03 9654 7117	Facsimile	: +61 7 3243 7218
Project	: 60156173 1 01 GAA Berwick Waterways	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2010
Sampler	: JH	Issue Date	: 20-JUL-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Bne Acid Sulphate Soils

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 1419439)									
EB1012283-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.20	0.20	0.0	0% - 50%
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	123	123	0.0	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	3.7	3.7	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1419439)									
EB1012283-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 1419439)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1419439)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB1012294**	Page	: 1 of 5
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Brisbane
Contact	: MR ERIC PRITCHARD	Contact	: Greg Vogel
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: eric.pritchard@aecom.com	E-mail	: brisbane.enviro.services@alsglobal.com
Telephone	: +61 03 9653 1234	Telephone	: +61 7 3243 7222
Facsimile	: +61 03 9654 7117	Facsimile	: +61 7 3243 7218
Project	: 60156173 1 01 GAA Berwick Waterways	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2010
Sampler	: JH	Issue Date	: 20-JUL-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
80* dried soil							
QC102	**06-JUL-2010**	**19-JUL-2010**	06-JUL-2011	✓	**19-JUL-2010**	17-OCT-2010	✓
EA033-B: Potential Acidity							
80* dried soil							
QC102	**06-JUL-2010**	**19-JUL-2010**	06-JUL-2011	✓	**19-JUL-2010**	17-OCT-2010	✓
EA033-C: Acid Neutralising Capacity							
80* dried soil							
QC102	**06-JUL-2010**	**19-JUL-2010**	06-JUL-2011	✓	**19-JUL-2010**	17-OCT-2010	✓
EA033-D: Retained Acidity							
80* dried soil							
QC102	**06-JUL-2010**	**19-JUL-2010**	06-JUL-2011	✓	**19-JUL-2010**	17-OCT-2010	✓
EA033-E: Acid Base Accounting							
80* dried soil							
QC102	**06-JUL-2010**	**19-JUL-2010**	06-JUL-2011	✓	**19-JUL-2010**	17-OCT-2010	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Form:

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000

Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email:

Laboratory Details
Lab. Name: MGT
Lab Address:
Contact Name:
Lab Ref:

Tel:
Fax:
Preliminary Report by:
Final Report by
Lab Quote No:

Project Name:

Project Number:

Purchase Order Number:

Sample collected by:

Sample Results to be returned to:

Specifications: Ref: 266139

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☐ Email	☐ Yes	☐ No	☐ N/A
7. Report Format	8. Project Manager:		tel:

Analysis Request

WRG 621 Screen

Environmental Division
Melbourne
Work Order
EM1005891

Telephone : +61-3-8549 9600

Lab ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Remarks & comments
TP12_0.95-1.0		26/5/10		↓					↓			HOLD
TP12_0.50-0.55		✓										HOLD
SPIKE											X	
QLCS											X	
QCCS				↓					↓		X	Send to ALS Please
TP12_1.0-1.05	EXTRA SAMPLE											

(1)

Relinquished By:	**Received by:**	Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Name: Date:	Name: Date:	Samples received chilled?	Yes/No/NA	Consignment Note No.	
of: Time:	of: MGT Time:		Yes/No/NA	Transport Co:	
Relinquished By:	**Received by:**	Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Name: Date:	Name: Date: 7/6	Samples received chilled?	Yes/No/NA	Consignment Note No.	
of: Time:	of: AES Time: 1:45		Yes/No/NA	Transport Co:	

Printed copies of this document are uncontrolled

Ranil Weerakkody

From: Sample Receipt 3 [sample_receipt_3@mgtenv.com.au]
Sent: Tuesday, 1 June 2010 11:18 AM
To: Samples Melbourne
Subject: FW: CoC for sample
Attachments: aecom_coc.pdf

Sorry lets try that again!

From: Sample Receipt 3
Sent: Tuesday, 1 June 2010 11:15 AM
To: 'samples.melbourne@alsenviro.com'
Subject: CoC for sample

Hi Ranil,

You should be receiving a soil sample today from labmark with the ID QC02. Please find attached to this email a CoC for that sample.
If you have any questions please let me know!

Kind Regards
Robyn Ferguson

This email has been scanned by the MessageLabs Email Security System.
For more information please visit http://www.messagelabs.com/email

Click here to report this email as spam.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EM1005891**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MS JENNIFER HUME	Contact	: Steven McGrath
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: jennifer.hume@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: ----	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2010HLAENV0384 (EN/004/10)
Site	: ----		
Sampler	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 01-JUN-2010	Issue Date	: 02-JUN-2010 09:56
Client Requested Due Date	: 08-JUN-2010	Scheduled Reporting Date	: **08-JUN-2010**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 9.2 - Ice bricks present
No. of coolers/boxes	: 1 FOAM	No. of samples received	: 1
Sercurity Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times**
- **Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.**
- **Analytical work for this work order will be conducted at ALS Melbourne.**
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - P-16 EPA 448.3 Comprehensive
EM1005891-001	26-MAY-2010 15:00	QC02	✓

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	Simonette.nibaldi@aecom.com

MS JENNIFER HUME

- *AU Certificate of Analysis - NATA	Email	jennifer.hume@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	jennifer.hume@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA	Email	jennifer.hume@aecom.com
- A4 - AU Sample Receipt Notification - Environmental	Email	jennifer.hume@aecom.com
- A4 - AU Tax Invoice	Email	jennifer.hume@aecom.com
- Chain of Custody (CoC)	Email	jennifer.hume@aecom.com
- EDI Format - ENMRG	Email	jennifer.hume@aecom.com
- EDI Format - ESDAT	Email	jennifer.hume@aecom.com
- EDI Format - HLAPro	Email	jennifer.hume@aecom.com
- EDI Format - XTab	Email	jennifer.hume@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1005891**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MS JENNIFER HUME	Contact	: Scott James
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: jennifer.hume@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 60156173/1.01		
C-O-C number	: ----	Date Samples Received	: 01-JUN-2010
Sampler	: JH	Issue Date	: 08-JUN-2010
Site	: ----		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Instrument Chemist	Inorganics
Herman Lin	Senior Inorganic Chemist	Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Organics
Terrance Hettipathirana	Team Leader - Metals	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG048: EM1005882 #15 spiked failed foor hexavalent chromium due to sample matrix. this has been confirmed by re-analysis.**
- **EP066-EM/075-EM: Sample EM1005891-001 required dilution prior to analysis due to matrix interferences (dark colour). LOR values have been adjusted accordingly.**
- **EP074-UT: LOR rasied for Methylene Chloride due to laboratory background level.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	26-MAY-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1005891-001	----	----	----	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**8.6**	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Copper	7440-50-8	5	mg/kg		**11**	----	----	----	----
Lead	7439-92-1	5	mg/kg		**8**	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**16**	----	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	----	----	----	----
Silver	7440-22-4	2	mg/kg		<2	----	----	----	----
Tin	7440-31-5	5	mg/kg		<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**11**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	----	----	----
EK026G: Total Cyanide By Discrete Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		**120**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.50	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.6	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	26-MAY-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1005891-001	----	----	----	----
EP074I: Volatile Halogenated Compounds - Continued									
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons (VIC EPA 448.3)	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons (VIC EPA 448.3)	----	0.01	mg/kg		<0.01	----	----	----	----
Total Xylenes	1330-20-7	0.50	mg/kg		<0.50	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.06	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.06	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.06	----	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg		<0.06	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.06	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.06	----	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.06	----	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.12	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.06	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	26-MAY-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1005891-001	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.06	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.06	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.06	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.06	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.06	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.06	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.06	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	26-MAY-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1005891-001	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.06	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.06	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.06	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.06	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.06	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.06	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.06	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.06	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.06	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.06	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.06	----	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.06	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.06	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.06	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.06	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg		<0.06	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.06	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.06	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**65.5**	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**95.2**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**99.0**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**99.8**	----	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.1	%		**57.5**	----	----	----	----
Phenol-d6	13127-88-3	0.1	%		**49.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**60.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**85.6**	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC02	----	----	----	----
				Client sampling date / time: 26-MAY-2010 15:00	----	----	----	----
				EM1005891-001	**----**	**----**	**----**	**----**
EP075T: Base/Neutral Extractable Surrogates - Continued								
Nitrobenzene-D5	4165-60-0	0.1	%	**56.7**	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	**82.9**	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	**70.5**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**75.2**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**92.0**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	42.4	131
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80.0	120
Toluene-D8	2037-26-5	81.0	117
4-Bromofluorobenzene	460-00-4	74.0	121
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	16.0	142.2
Phenol-d6	13127-88-3	20.1	125.8
2-Chlorophenol-D4	93951-73-6	19.9	122.9
2.4.6-Tribromophenol	118-79-6	10.0	134.6
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	24.5	123.2
1.2-Dichlorobenzene-D4	2199-69-1	24.3	122.9
2-Fluorobiphenyl	321-60-8	35.1	125.3
Anthracene-d10	1719-06-8	40.8	129.9
4-Terphenyl-d14	1718-51-0	39.1	141.3

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EM1005891**	Page	: 1 of 12
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MS JENNIFER HUME	Contact	: Scott James
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: jennifer.hume@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 01-JUN-2010
Sampler	: JH	Issue Date	: 08-JUN-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Instrument Chemist	Inorganics
Herman Lin	Senior Inorganic Chemist	Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Organics
Terrance Hettipathirana	Team Leader - Metals	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1366712)									
EM1005881-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	12.3	12.0	2.1	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1367851)									
EM1005567-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	63	54	14.5	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	26	8.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	27	20	30.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	83	73	12.3	0% - 50%
EM1005567-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	30	36	17.7	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	20	21.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	11	14.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	30	12.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1367852)									
EM1005567-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1005567-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1369446)									
EM1005882-009	Anonymous	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1005891-001	QC02	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1366300)									
EM1005880-046	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM1005891-001	QC02	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 1366311)									
EM1005815-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	210	4.6	No Limit
EM1005887-017	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	210	200	6.9	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1368524)									
EM1005888-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1367012)									
EM1005891-001	QC02	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1367012)									
EM1005891-001	QC02	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.6	<0.6	0.0	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1368523)									
EM1005888-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1368523) - continued									
EM1005888-003	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1368523)									
EM1005888-003	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1368523)									
EM1005888-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1368523)									
EM1005888-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1368523) - continued									
EM1005888-003	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1367012)									
EM1005891-001	QC02	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1367839)									
EM1005882-041	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM1005910-046	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1367851)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	105	82.8	119
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	89.5	85.4	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	99.6	85.5	116
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	101	85.4	115
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	8.5 mg/kg	92.3	80	120
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	99.2	86.6	113
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	5.23 mg/kg	92.7	80.5	119
EG005T: Tin	7440-31-5	5	mg/kg	<5	26.3 mg/kg	96.2	80	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	98.4	81.3	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1367852)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	80.7	71.9	119
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1369446)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	82.7	80	120
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1366300)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	100	86.3	118
EK040T: Fluoride Total (QCLot: 1366311)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	100	80	120
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1368524)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	0.66 mg/kg	91.2	61.2	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1367012)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	93.1	80.0	120
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	92.2	80.0	120
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	99.7	80.0	120
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	94.4	80.0	120
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	0.1 mg/kg	106	76.0	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	98.5	80.0	120
EP074I: Volatile Halogenated Compounds (QCLot: 1367012)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	91.5	65.6	112
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	94.5	70.8	122
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.6	2.1 mg/kg	# 69.7	75.3	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	91.5	79.0	121

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1367012) - continued								
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	80.0	122
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.5	70.4	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	72.0	120
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	96.0	65.5	120
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	71.6	128
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	96.5	75.7	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	102	80.0	120
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	102	70.0	130
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	103	70.0	130
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	112	75.7	126
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	108	68.4	118
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	108	79.7	124
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	# 117	72.3	116
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	# 126	80.0	120
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	# 130	73.0	118
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1368523)								
EP075-EM: 2-Chlorophenol	95-57-8	0.025	mg/kg	<0.02	0.5 mg/kg	94.9	39.8	139
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.025	mg/kg	<0.02	0.5 mg/kg	98.1	35	135
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.025	mg/kg	<0.02	0.5 mg/kg	100	36.7	136
EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.025	mg/kg	<0.02	1.0 mg/kg	49.8	45.2	141
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.025	mg/kg	<0.02	0.5 mg/kg	97.9	41.4	137
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.025	mg/kg	<0.02	0.5 mg/kg	106	42.2	143
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.025	mg/kg	<0.02	0.5 mg/kg	91.3	41	139
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	1.0 mg/kg	94.9	23.6	145
EP075-EM: Pentachlorophenol	87-86-5	0.025	mg/kg	<0.02	0.5 mg/kg	60.5	25	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1368523)								
EP075-EM: Phenol	108-95-2	0.025	mg/kg	<0.02	0.5 mg/kg	87.8	44	144
EP075-EM: 2-Methylphenol	95-48-7	0.025	mg/kg	<0.02	0.5 mg/kg	92.9	39.1	135
EP075-EM: 3- & 4-Methylphenol	1319-77-3	0.025	mg/kg	<0.02	1 mg/kg	91.2	33.8	176
EP075-EM: 2-Nitrophenol	88-75-5	0.025	mg/kg	<0.02	0.5 mg/kg	91.0	25.6	145
EP075-EM: 2.4-Dimethylphenol	105-67-9	0.025	mg/kg	<0.02	0.5 mg/kg	94.0	10	138
EP075-EM: 2.4-Dinitrophenol	51-28-5	0.025	mg/kg	----	3 mg/kg	29.8	15.9	136
		2	mg/kg	<2	----	----	----	----
EP075-EM: 4-Nitrophenol	100-02-7	0.025	mg/kg	----	3 mg/kg	116	41.1	155
		2	mg/kg	<2	----	----	----	----
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	0.025	mg/kg	----	3 mg/kg	60.5	15.4	133
		2	mg/kg	<2	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1368523) - continued								
EP075-EM: Dinoseb	88-85-7	0.025	mg/kg	----	3 mg/kg	92.6	32	136
		2	mg/kg	<2	----	----	----	----
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	0.025	mg/kg	----	3 mg/kg	71.8	10	169
		2	mg/kg	<2	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1368523)								
EP075-EM: Naphthalene	91-20-3	0.025	mg/kg	<0.02	0.5 mg/kg	94.2	41.2	136
EP075-EM: Acenaphthene	83-32-9	0.025	mg/kg	<0.02	0.5 mg/kg	94.5	48	133
EP075-EM: Acenaphthylene	208-96-8	0.025	mg/kg	<0.02	0.5 mg/kg	102	45.2	137
EP075-EM: Fluorene	86-73-7	0.025	mg/kg	<0.02	0.5 mg/kg	97.3	49.6	136
EP075-EM: Phenanthrene	85-01-8	0.025	mg/kg	<0.02	0.5 mg/kg	104	61.8	132
EP075-EM: Anthracene	120-12-7	0.025	mg/kg	<0.02	0.5 mg/kg	102	61.3	127
EP075-EM: Fluoranthene	206-44-0	0.025	mg/kg	<0.02	0.5 mg/kg	106	66.2	134
EP075-EM: Pyrene	129-00-0	0.025	mg/kg	<0.02	0.5 mg/kg	106	67.5	132
EP075-EM: Benz(a)anthracene	56-55-3	0.025	mg/kg	<0.02	0.5 mg/kg	101	64.9	133
EP075-EM: Chrysene	218-01-9	0.025	mg/kg	<0.02	0.5 mg/kg	117	66.2	136
EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.05	mg/kg	<0.05	1.0 mg/kg	104	65.4	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.025	mg/kg	<0.02	0.5 mg/kg	103	62.4	131
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.025	mg/kg	<0.02	0.5 mg/kg	98.9	31.5	148
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.025	mg/kg	<0.02	0.5 mg/kg	96.1	33.3	145
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.025	mg/kg	<0.02	0.5 mg/kg	102	28.9	153
EP075I: Organochlorine Pesticides (QCLot: 1368523)								
EP075-EM: alpha-BHC	319-84-6	0.025	mg/kg	<0.02	0.5 mg/kg	102	54.9	137
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.025	mg/kg	<0.02	0.5 mg/kg	99.1	24.4	133
EP075-EM: beta-BHC	319-85-7	0.025	mg/kg	<0.02	0.5 mg/kg	104	47	138
EP075-EM: gamma-BHC	58-89-9	0.025	mg/kg	<0.02	0.5 mg/kg	107	60.3	135
EP075-EM: delta-BHC	319-86-8	0.025	mg/kg	<0.02	0.5 mg/kg	107	68.1	132
EP075-EM: Heptachlor	76-44-8	0.025	mg/kg	<0.02	0.5 mg/kg	106	61.4	132
EP075-EM: Aldrin	309-00-2	0.025	mg/kg	<0.02	0.5 mg/kg	109	63.1	131
EP075-EM: Heptachlor epoxide	1024-57-3	0.025	mg/kg	<0.02	0.5 mg/kg	108	67.9	129
EP075-EM: cis-Chlordane	5103-71-9	0.025	mg/kg	<0.02	0.5 mg/kg	110	38.8	137
EP075-EM: trans-Chlordane	5103-74-2	0.025	mg/kg	<0.02	0.5 mg/kg	111	65	133
EP075-EM: Endosulfan 1	959-98-8	0.025	mg/kg	<0.02	0.5 mg/kg	110	63.5	136
EP075-EM: 4.4`-DDE	72-55-9	0.025	mg/kg	<0.02	0.5 mg/kg	109	62.3	133
EP075-EM: Dieldrin	60-57-1	0.025	mg/kg	<0.02	0.5 mg/kg	108	67.6	134
EP075-EM: Endrin aldehyde	7421-93-4	0.025	mg/kg	<0.02	0.5 mg/kg	154	25.1	177
EP075-EM: Endrin	72-20-8	0.025	mg/kg	<0.02	0.5 mg/kg	112	60.7	137
EP075-EM: Endosulfan 2	33213-65-9	0.025	mg/kg	<0.02	0.5 mg/kg	111	67.8	138
EP075-EM: 4.4`-DDD	72-54-8	0.025	mg/kg	<0.02	0.5 mg/kg	108	66.5	135

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1368523) - continued								
EP075-EM: Endosulfan sulfate	1031-07-8	0.025	mg/kg	<0.02	0.5 mg/kg	111	60	140
EP075-EM: 4.4`-DDT	50-29-3	0.025	mg/kg	<0.02	0.5 mg/kg	110	61	139
EP075-EM: Methoxychlor	72-43-5	0.025	mg/kg	<0.02	0.5 mg/kg	113	64.2	138
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1367012)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	33.1 mg/kg	100	73.2	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1367839)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	606 mg/kg	76.2	69	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1460 mg/kg	107	69	127
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	342 mg/kg	112	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1367851)							
EM1005567-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.5	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	116	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	105	70	130
		EG005T: Molybdenum	7439-98-7	50 mg/kg	87.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	112	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	86.1	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	121	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1367852)							
EM1005567-002	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	71.3	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1369446)							
EM1005882-015	Anonymous	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	# 53.1	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1366300)							
EM1005880-064	Anonymous	EK026G: Total Cyanide	57-12-5	20 mg/kg	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1368524)							
EM1005891-001	QC02	EP066-EM: Total Polychlorinated biphenyls	----	0.66 mg/kg	98.5	67	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1367012)							
EM1005893-004	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	108	70	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	104	70	130
EP074I: Volatile Halogenated Compounds (QCLot: 1367012)							
EM1005893-004	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	87.2	70	130
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	80.3	70	130
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	100	70	130
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1368523)							
EM1005888-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	79.6	70	130
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.5 mg/kg	84.6	70	130
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	# 52.6	70	130
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1368523)							
EM1005888-004	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	71.9	70	130
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	70.2	70	130
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1368523)							
EM1005888-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	77.2	70	130
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	86.2	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1367012)							
EM1005893-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	113	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1367839)							
EM1005882-042	Anonymous	EP071: C10 - C14 Fraction	----	606 mg/kg	# 56.8	60	130
		EP071: C15 - C28 Fraction	----	1460 mg/kg	101	60	130
		EP071: C29 - C36 Fraction	----	342 mg/kg	127	60	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1005891**	Page	: 1 of 8
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MS JENNIFER HUME	Contact	: Scott James
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: jennifer.hume@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 01-JUN-2010
Sampler	: JH	Issue Date	: 08-JUN-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**----**	----	----	**02-JUN-2010**	02-JUN-2010	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**03-JUN-2010**	23-JUN-2010	✓	**07-JUN-2010**	22-NOV-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**03-JUN-2010**	23-JUN-2010	✓	**07-JUN-2010**	23-JUN-2010	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	23-JUN-2010	✓	**07-JUN-2010**	11-JUN-2010	✓
EK026G: Total Cyanide By Discrete Analyser							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**02-JUN-2010**	02-JUN-2010	✓	**03-JUN-2010**	16-JUN-2010	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**02-JUN-2010**	02-JUN-2010	✓	**02-JUN-2010**	02-JUN-2010	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**07-JUN-2010**	14-JUL-2010	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**03-JUN-2010**	09-JUN-2010	✓	**04-JUN-2010**	09-JUN-2010	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**03-JUN-2010**	09-JUN-2010	✓	**04-JUN-2010**	09-JUN-2010	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**07-JUN-2010**	14-JUL-2010	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**07-JUN-2010**	14-JUL-2010	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**07-JUN-2010**	14-JUL-2010	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**07-JUN-2010**	14-JUL-2010	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**03-JUN-2010**	09-JUN-2010	✓	**04-JUN-2010**	09-JUN-2010	✓
Soil Glass Jar - Unpreserved							
QC02	**26-MAY-2010**	**04-JUN-2010**	09-JUN-2010	✓	**04-JUN-2010**	14-JUL-2010	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	10	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Hexavalent Chromium by Alkaline Digestion	EG048	SOIL	USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by UV-VIS spectrophotometer following pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide By Discrete Analyser	EK026G	SOIL	APHA 21st 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Volatile Organic Compounds - Ultra-trace	* EP074-UT	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	* EP075-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions

Preparation Methods	Method	Matrix	Method Descriptions
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
NaOH leach for TCN in Soils	EK026PR	SOIL	APHA 21st ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.
Total Fluoride	EK040T-PR	SOIL	(In-house) Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17A-EM	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074I: Volatile Halogenated Compounds	1588448-001	----	**Methylene chloride**	75-09-2	69.7 %	75.3-131%	**Recovery less than lower control limit**
EP074I: Volatile Halogenated Compounds	1588448-001	----	**1.4-Dichlorobenzene**	106-46-7	117 %	72.3-116%	**Recovery greater than upper control limit**
EP074I: Volatile Halogenated Compounds	1588448-001	----	**1.2-Dichlorobenzene**	95-50-1	126 %	80.0-120%	**Recovery greater than upper control limit**
EP074I: Volatile Halogenated Compounds	1588448-001	----	**1.2.4-Trichlorobenzene**	120-82-1	130 %	73.0-118%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM1005882-015	Anonymous	**Hexavalent Chromium**	18540-29-9	53.1 %	70-130%	**Recovery less than lower data quality objective**
EP075A: Phenolic Compounds (Halogenated)	EM1005888-004	Anonymous	**Pentachlorophenol**	87-86-5	52.6 %	70-130%	**Recovery less than lower data quality objective**
EP080/071: Total Petroleum Hydrocarbons	EM1005882-042	Anonymous	**C10 - C14 Fraction**	----	56.8 %	60-130%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Form: AECOM

AECOM

Chain of Custody & Analysis Request Form

AECOM - Melbourne
Level 9, 8 Exhibition Street
Melbourne VIC 3000
Tel: 61 3 9653 1234
Fax: 61 3 9653 1234
Email: eric.pritchard@aecom.com

Laboratory Details
Lab. Name: ALS
Lab. Address:
Contact Name:
Lab. Ref:
Tel: 85499600
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: GAA Berwick Waterways
Project Number: 60156173 / 1.01
Purchase Order Number: 60156173 / 1.01
Sample collected by: JH
Sample Results to be returned to: eric.pritchard@aecom.com

Specifications:

	(Tick)		
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	☐ Yes	☐ No	☐ N/A
2. Fast TAT Guarantee Required?	☐ Yes	☐ No	☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions?	☐ Yes	☐ No	☐ N/A
4. Special storage requirements?	☐ Yes	☐ No	☐ N/A
5. Preservation requirements?	☐ Yes	☐ No	☐ N/A
6. Other requirements? ☐ Fax ☐ Hard copy ☑ Email	☐ Yes	☐ No	☐ N/A

7. Report Format:
8. Project Manager:
tel:

Environmental Division
Melbourne
Work Order
EM1007486

Telephone : +61-3 8549 9600

Lab. ID	Sample ID	Sampling Date & time (on)	Sampling Date & Time (off)	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Re: Acid sulphate soil assessment	PH F	PH ox	SPOCAS suite	Scr suite
	BH32-0.65	6/7/10		x			x		x		1 Bag	x	x	x		
	QC101	↓		x			x	x	x		↓	x	x	x		
(1)	QC102	↓		x			x	x	x		↓	x	x	x		
				x			x	x	x							
				x			x	x	x							
				x			x	x	x							
				x			x	x	x							
				x			x	x	x							
				x			x	x	x							
				x			x	x	x							

Please send to ALS (ensure sample kept frozen)

Relinquished By:	Received by:		
Name: J. Home	Name:	Date: 6/7/10	Time: 2.30pm
of: AECOM.	of: MGT	Time: 6/7/10	
Relinquished By: (Analysis)	**Received by:**		
Name: J Home	Name: Krushik	Date: 7/7	Time: 1.00
of:	of: AU		

Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Samples received chilled?	Yes/No/NA	Consignment Note No.	
	Yes/No/NA	Transport Co:	
Received in good condition?	Yes/No/NA	Method of Shipment	☐ Courier ☐ Postal ☐ By Hand
Samples received chilled?	Yes/No/NA	Consignment Note No.	
	Yes/No/NA	Transport Co:	

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EM1007486**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MR ERIC PRITCHARD	Contact	: Steven McGrath
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: eric.pritchard@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	Page	: 1 of 2
Order number	: 60156173/1.01		
C-O-C number	: ----	Quote number	: ES2010HLAENV0384 (EN/004/10)
Site	: ----		
Sampler	: JH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 07-JUL-2010	Issue Date	: 09-JUL-2010 15:24
Client Requested Due Date	: 14-JUL-2010	Scheduled Reporting Date	: **14-JUL-2010**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 1.2 - Ice bricks present
No. of coolers/boxes	: 1	No. of samples received	: 1
Sercurity Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times**
- **Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.**
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA003 pH field/fox
EM1007486-001	06-JUL-2010 15:00	QC102	✓

Requested Deliverables

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	Simonette.nibaldi@aecom.com

MR ERIC PRITCHARD

- *AU Certificate of Analysis - NATA (COA)	Email	eric.pritchard@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	eric.pritchard@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	eric.pritchard@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	eric.pritchard@aecom.com
- A4 - AU Tax Invoice (INV)	Email	eric.pritchard@aecom.com
- Chain of Custody (CoC) (COC)	Email	eric.pritchard@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	eric.pritchard@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	eric.pritchard@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	eric.pritchard@aecom.com
- EDI Format - XTab (XTAB)	Email	eric.pritchard@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1007486**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MR ERIC PRITCHARD	Contact	: Steven McGrath
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: eric.pritchard@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 60156173/1.01		
C-O-C number	: ----	Date Samples Received	: 07-JUL-2010
Sampler	: JH	Issue Date	: 27-JUL-2010
Site	: ----		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Bne Acid Sulphate Soils

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **27/7/10 - This report has been amended and re-released to allow the reporting of additional analytical data.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	QC102	----	----	----	----
			Client sampling date / time	06-JUL-2010 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1007486-001	----	----	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**6.1**	----	----	----	----
pH (Fox)	----	0.1	pH Unit	**3.4**	----	----	----	----
Reaction Rate	----	1	Reaction Uni	**2**	----	----	----	----

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EM1007486**	Page	: 1 of 5
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: MR ERIC PRITCHARD	Contact	: Steven McGrath
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: eric.pritchard@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 07-JUL-2010
Sampler	: JH	Issue Date	: 27-JUL-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Bne Acid Sulphate Soils

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA003 :pH (field/fox) (QC Lot: 1411922)									
EM1007486-001	QC102	EA003: Reaction Rate	----	1	--	2	2	0.0	No Limit
		EA003: pH (F)	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.4	3.4	0.0	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (SCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1007486**	Page	: 1 of 5
Amendment	: **1**		
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Melbourne
Contact	: MR ERIC PRITCHARD	Contact	: Steven McGrath
Address	: LEVEL 45, 80 COLLINS STREET MELBOURNE VIC, AUSTRALIA 3004	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: eric.pritchard@aecom.com	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 03 9653 1234	Telephone	: +61-3-8549 9600
Facsimile	: +61 03 9654 7117	Facsimile	: +61-3-8549 9601
Project	: 60156173 1 01 GAA BERWICK WATERWAYS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 07-JUL-2010
Sampler	: JH	Issue Date	: 27-JUL-2010
Order number	: 60156173/1.01		
		No. of samples received	: 1
Quote number	: EN/004/10	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)							
Snap Lock Bag QC102	**06-JUL-2010**	**----**	----	----	**12-JUL-2010**	07-JUL-2010	×

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/fox	EA003	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In House

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	**Days overdue**	Date analysed	Due for analysis	**Days overdue**
EA003 :pH (field/fox)						
Snap Lock Bag						
QC102	----	----	----	12-JUL-2010	07-JUL-2010	**5**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

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Appendix L

Survey Data

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ACCURATE
LAND SURVEYORS

19-07-2010

AECOM
Level 45 80 Collins Street
Melbourne VIC 3000

Dear Eric,

Re: Centre Road Berwick

We are please to report that the following marks below have been measured to MGA and AHD by a licensed surveyor on 16-07-2010:

Monitoring Point Id	***Easting***	***Northing***	***AHD***	***AHD Ground Level***
MW01	352509.20	5787563.47	18.942	17.998
MW02	353206.75	5787256.30	19.753	18.787
MW03	352775.73	5786562.05	19.372	**18.400**
MGA coordinates derived from PSM 921 on 16-07-2010				
AHD derived from PSM 921 on 16-07-2010				
MGA measured to ± 0.01m				
AHD measured to ±0.001m				
Combined Scale Factor: 0.9998648 Zone 55				

If you have any questions feel free to contact me personally.

Yours sincerely,

Ben Couch
Licensed Surveyor

134 McKillop Street Geelong VIC 3220
Mobile 0412722261 Fax (03) 8612 4998
ben@accuratelandsurveyors.com.au
www.accuratelandsurveyors.com.au

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Appendix M

Groundwater Field Data Sheets

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AECOM

Site Contamination Analysis – Water Quality Sampling Form

Project Name: Berwick	Project Number: 60156173	Well No: MW01
Recorded By: JH	Well Type: ☒ Monitor ☐ Extractor ☐ Other	
Date: 16/7/10	Well Material: ☑ PVC ☐ SS ☐ Other	

Well Purging

Well Details	Purge Method
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other:	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other:
Total Depth of Well (TD in m BTOC): 1.365	☒ Pump – Type: ☒ Submersible ☒ Bladder ☐ Other:
Water Level Depth (WL in m BTOC):	**Pump Intake Setting**
Number of bore volumes (BV) to be purged (# VOLS)	Depth pump set (m BTOC):
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☒ Other Stabilization	Screen Interval (m BTOC) Top : Bottom:

Purge Volume Calculation: (accounting for porosity of packing material surrounding well in bore hole)

[(____ (TD) - ____ (WL)) x (____ (D)/2)^2 x 0.00314] + [0.2 x (0.00314 x ____ (borehole radius)^2 x ____ (TD-WL)) – 0.2 x (0.00314 x ____ (well radius)^2 x ____ (TD-WL))] = ____ (1 BV (L))

Start Time: 13:28 Stop Time: 15:50 Elapsed Time: Initial depth to water: (with pump in well) 1.16 Final depth to water: (after sampling, with pump in well) 1.98

Field Parameter Measurements

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
13.32	4	0.5	5.75	4562	7.05	177.9	14.5	1.55	
13.44	16	1	5.10	4761	6.45	166.0	14.3	1.5761	35/s
13.54	26	1.5	5.86	5307	6.30	166.1	14.3	1.695	95/s
13.59	31	2.5	5.04	5150	6.30	164.6	14.6	1.92	95/s
14.09	41	3	5.99	6211	6.12	1730	14.6	1.93	"
14.15	47	3.5	5.65	6257	6.10	171.0	14.7	1.94	"
14.20	54	4	5.89	6324	6.08	180.6	14.7	1.95	105/s
14.26	101	4.5	5.87	6360	6.07	184.9	14.7	1.94	"
14.32	104	5	5.81	6430	6.05	189.1	14.7	1.95	"
14.45	117	5.5	5.80	6446	6.05	192.9	14.7	1.95	"
14.51	63	6	5.88	6452	6.05	195.0	14.7	1.96	"
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Purged to

Observations in first 1L purged (turbidity, colour, odour, sheen): NO, clear, NO, NO

Observations during sampling (turbidity, colour, odour, sheen):

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

Well Sampling

Sampling Method ☒ Same as purge method ☐ Other:

Sample Distribution Sample Series:

Sample No.	Vol/Cont.	Analysis	Preservatives	Lab	Comments
MW01	4P 1L 2V	See COC	ACID ICE	MGT	

Quality Control Samples

QA/QC Sample ID	Sample Type (duplicate, etc)	Parent Sample ID

Sampling notes: well condition, weather, change in pump depth, equipment difficulties

Do ECs need review? ☐ Yes ☐ No Are salinity corrections warranted?: ☐ Yes ☐ No

Note: m BTOC = m below top of casing

AECOM

Site Contamination Analysis – Water Qua!ity Sampling Form

Project Name: Berwick	Project Number: 60156173	Well No: MW02
Recorded By: JH	Well Type: ☒ Monitor ☐ Extractor ☐ Other	
Date: 16/7/10	Well Material: ☒ PVC ☐ SS ☐ Other	

Well Purging

Well Details	Purge Method
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other:	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other:
Total Depth of Well (TD in m BTOC):	☒ Pump – Type: ☒ Submersible ☒ Bladder ☐ Other:
Water Level Depth (WL in m BTOC): 1.074	**Pump Intake Setting**
Number of bore volumes (BV) to be purged (# VOLS)	Depth pump set (m BTOC): 5.00
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☑ Other	Screen Interval (m BTOC) Top : Bottom:

Purge Volume Calculation: (accounting for porosity of packing material surrounding well in bore hole)

[(____ (TD) - ____ (WL)) x (____ (D)/2)^2 x 0.00314] + [0.2 x (0.00314 x ____ (borehole radius)^2 x ____ (TD-WL)) – 0.2 x (0.00314 x ____ (well radius)^2 x ____ (TD-WL))] = ____ 1 BV (L)

Start Time: 10:33 Stop Time: 12:45 Elapsed Time: Initial depth to water: (with pump in well) 1.023 Final depth to water: (after sampling, with pump in well) 1.39

Field Parameter Measurements

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
10:36	3	0.5	6.37	6234	7.00	136.5	14.4	1.15	1LPM
10:45	12	1	5.94	6162	6.58	149.7	13.8	1.36	75/5
11:01	28	2	5.95	6267	6.52	155.3	14.5	1.39	0.5/5
11:08	35	2.5	5.85	6308	6.52	154.3	14.8	1.40	"
11:16	43	3	5.42	6228	6.53	152.2	14.2	1.39	105/5
11:27	54	3.5	5.19	6167	6.52	155.0	14.0	1.40	"
11:35	62	4	5.13	6275	6.51	155.4	14.7	1.39	"
11:43	70	4.5	5.10	6291	6.51	154.6	14.9	1.39	"
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations in first 1L purged (turbidity, colour, odour, sheen): no, clear, no, no

Observations during sampling (turbidity, colour, odour, sheen): v. low, clear/brown, no, no

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

Well Sampling

Sampling Method ☒ Same as purge method ☐ Other:

Sample Distribution Sample Series:

Sample No.	Vol/Cont.	Analysis	Preservatives	Lab	Comments
MW02	4P 1A 2V	See COC	ACID ICE	MGT	

Quality Control Samples

QA/QC Sample ID	Sample Type (duplicate, etc)	Parent Sample ID

Sampling notes: well condition, weather, change in pump depth, equipment difficulties

good con, cold overcast.
pump set @ 5m - where clay became wet.

Do ECs need review? ☐ Yes ☐ No Are salinity corrections warranted?: ☐ Yes ☐ No

Note: m BTOC = m below top of casing

AECOM

Site Contamination Analysis – Water Quality Sampling Form

Project Name: Berwick	Project Number: 60156173	Well No: MW03
Recorded By: JH	Well Type: ☒ Monitor ☐ Extractor ☐ Other	
Date: 16/7/10	Well Material: ☒ PVC ☐ SS ☐ Other	

Well Purging

Well Details	Purge Method
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other:	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other:
Total Depth of Well (TD in m BTOC): 10.15	☒ Pump – Type: ☒ Submersible ☒ Bladder ☐ Other:
Water Level Depth (WL in m BTOC): 0.00	**Pump Intake Setting**
Number of bore volumes (BV) to be purged (# VOLS)	Depth pump set (m BTOC): 4.80m
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☒ Other Stabilization	Screen Interval (m BTOC) Top: 3 Bottom: 9

Purge Volume Calculation: (accounting for porosity of packing material surrounding well in bore hole)

[(____ (TD) - ____ (WL)) x (____ (D)/2)^2 x 0.00314] + [0.2 x (0.00314 x ____ (borehole radius)^2 x ____ (TD-WL)) – 0.2 x (0.00314 x ____ (well radius)^2 x ____ (TD-WL))] = ____ 1 BV (L)

Start Time:	Stop Time:	Elapsed Time:	Initial depth to water: (with pump in well)	Final depth to water: (after sampling, with pump in well)
8.33	9.35	62	0.05	0.60

Field Parameter Measurements

Actual Time	Elapsed minutes	Purge Vol (L)	DO (mg/L)	EC. (µS/cm)	pH	Redox (mV)	Temp (°C)	SWL (m BTOC)	Pump setting (rate)
8.35	2	2.5	1.13	5512	6.16	157.8	15.2	0.60	30/5
8.39	6	4	1.02	5515	6.19	147.8	15.1	0.60	"
8.44	11	6	0.72	5543	6.19	144.7	15.3	0.60	"
8.47	14	7	0.65	5531	6.20	143.5	15.2	0.60	"
8.49	16	8	0.63	5527	6.20	143.2	15.1	0.60	"
8.52	19	9	0.51	5564	6.20	142.2	15.2	0.60	"
8.55	22	10	0.43	5553	6.20	141.8	15.2	0.60	"
8.58	25	11	0.39	5555	6.19	142.2	15.2	0.60	"
9.02	29	13	0.36	5562	6.19	143.1	15.3	0.60	"
Groundwater equilibrium reached at			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	(3 consecutive measurements)	

Observations in first 1L purged (turbidity, colour, odour, sheen): nil ~~fowl~~, clear, no, no

Observations during sampling (turbidity, colour, odour, sheen): m-k, brown/orange, no, no

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

Well Sampling

Sampling Method ☒ Same as purge method ☐ Other:

Sample Distribution Sample Series:

Sample No.	Vol/Cont.	Analysis	Preservatives	Lab	Comments
MW01	4P1A2V	See COC	Acid Ice	MGT	

Quality Control Samples

QA/QC Sample ID	Sample Type (duplicate, etc)	Parent Sample ID
QC200	Dup	MW03
QC201	Trip	MW03

Sampling notes: well condition, weather, change in pump depth, equipment difficulties

good con, cold overcast, water limited by cap. water height / Initial drawdown as bucket was lower then head

Do ECs need review? ☐ Yes ☐ No Are salinity corrections warranted?: ☐ Yes ☐ No

Note: m BTOC = m below top of casing