Appendix C
Penrith City Council Section 149 Certificates

06.02.08

PENRITH CITY COUNCIL
Serving Our Community

Civic Centre
601 High Street, Penrith

PO Box 60 Penrith NSW 2751
DX 8017 Penrith
Email: pencit@penrithcity.nsw.gov.au

Telephone: 02 4732 7777
Facsimile: 02 4732 7958

PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

Property No: 403496
Your Reference: ces080106-wpg post
Contact No: 85692200

Issue Date: 4/02/2008
Certificate No: 08/00475
Receipt Date: 4/02/2008
Receipt No: 2284952

Issued to: Consulting Earth Scientists
Jones Bay Wharf 19-21, Lower Deck
Suite 121, 26-32 Pirrama Road
PYRMONT NSW 2009

RECEIVED
PROJECT CODE
CES080106-WPG.

PRECINCT 996

DESCRIPTION OF LAND

County: CUMBERLAND **Parish: MELVILLE**

Location: 576b Mamre Road ERSKINE PARK NSW 2759
Land Description: Lot 11 DP 229784

- PART 1 PRESCRIBED MATTERS –

In accordance with the provisions of Section 149(2) of the Act the following information is furnished in respect of the abovementioned land:

1 *NAMES OF RELEVANT SEPPs, REPS, LEPs AND DCPs*

1(1)(a) The names of each local environmental plan and deemed environmental planning instrument applying to the land:

Penrith Local Environmental Plan 1994 (Erskine Park Employment Area), gazetted 25 November 1994, applies to the land.

Penrith Local Environmental Plan No. 255 – Exempt and Complying Development, gazetted 24 March 2000, as amended, (also) applies to land within the City of Penrith. (Note: This plan does not apply to the land to which Sydney Regional Environmental Plan No.30 – St Marys applies, except as provided by clause 43 of SREP No. 30 – St Marys.)

Penrith Local Environmental Plan No. 258 – Consent for Dwelling Houses and Other Development, gazetted 29 June 2001, (also) applies to all land within the City of Penrith.

1(1)(b) The names of each draft local environmental plan applying to the land that has been placed on exhibition under section 66(1) (b) of the Act:

Draft Penrith Local Environmental Plan 1999 (Flora And Fauna Conservation) applies to the land. **(See attached copy)**

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PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

State Environmental Planning Policy (Temporary Structures and Places of Public Entertainment) 2007.
State Environmental Planning Policy (Infrastructure) 2007.

1(3)(b) The names of each draft State environmental planning policy applying to the land that has been publicised as referred to in section 39(2) of the Act:

Draft State Environmental Planning Policy (SEPP 66) - Integrated Landuse and Transport applies to the land.

Draft State Environmental Planning Policy (Application of Development Standards) 2004 applies to the land.

2 *ZONING AND LAND USE UNDER RELEVANT LEPs*

2(a)-(d) The identity of the zone; the purposes that may be carried out without development consent; the purposes that may not be carried out except with development consent; and the purposes that are prohibited within the zone. If these sections apply to the land details are shown below and/or in annexures.
(Note: If a draft local environmental plan applies to the land details regarding sections 2(a)-2(h) of this certificate relevant to that draft local environmental plan may be found in the attached copy of the draft local environmental plan.)

Under the terms of Penrith Local Environmental Plan 1994 (Erskine Park Employment Area) the land is zoned as Zone No. 4(e1) (Employment - Restricted).

1. Objectives of zone

The objectives of this zone are:
(a) to prohibit certain development which is likely to have an adverse environmental effect on the amenity of adjoining localities; and
(b) to promote development which does not have an adverse environmental effect on the adjoining residential and rural communities arising from air, noise or other pollution, and
(c) to permit retail activities which are:
    (i) compatible with the concept of the employment area; and
    (ii) unlikely to prejudice the viability of existing business centres, or are primarily intended to service persons working in the Erskine Park Employment Area; and
(d) to permit office development of a type which:
    (i) would not be readily located in a traditional business zone; and
    (ii) would be unlikely to prejudice the viability of existing business centres; and
(e) to permit development for the purposes of recreation facilities, child care centres and community facilities in association with, or independent of, other permitted development to serve the needs of the workforce of the Area and the adjoining residential and rural communities; and
(f) to prohibit development of land for any purpose if, as a result of carrying out the development, there will be direct vehicular access between that land and either Erskine Park Road or Mamre Road; and
(g) to promote development of land with frontage to Mamre Road and Erskine Park Road if the buildings or works resulting from the carrying out of the development will, by their architectural and landscape design, enhance the rural scenic character of those roads and their roles as gateways to the City of Penrith.

2. Without development consent

Nil.

this particular land for the erection of a dwelling-house.

2(f) whether the land includes or comprises critical habitat:

The land does not include or comprise critical habitat.

2(g) whether the land is in a conservation area (however described):

The land is not in a conservation area.

2(h) whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage is not situated on the land.

3 *DECLARED STATE SIGNIFICANT DEVELOPMENT*

Item 3 Declared State Significant Development has been omitted from Planning Certificates vide Government Gazette No. 96 of 29 July 2005.

4 COASTAL PROTECTION

The land is not affected by the operation of sections 38 or 39 of the Coastal Protection Act 1979, to the extent that council has been so notified by the Department of Public Works.

5 MINE SUBSIDENCE

The land is not proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

6 *ROAD WIDENING AND ROAD REALIGNMENT*

The land is not affected by any road widening or road realignment under:
(a) Division 2 of Part 3 of the Roads Act 1993, or
(b) an environmental planning instrument, or
(c) a resolution of council.

7 COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

(a) Councils Policies
The land is not affected by a policy adopted by the council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

(b) Other Public Authority Policies
The Bush Fire Co-ordinating Committee has adopted a Bush Fire Risk Management Plan that covers the local government area of Penrith City Council, and includes public, private and Commonwealth lands.
The land is not affected by a policy adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the

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be subject to further requirements of the NSW Rural Fire Services.

12 PROPERTY VEGETATION PLANS

(Information is provided in this section only if Council has been notified that the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies.)

13 ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

(Information is provided in this section only if Council has been notified that an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.)

14 DIRECTIONS UNDER PART 3A

(Information is provided in this section only if there is a direction by the Minister in force under section 75P(2)(c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.)

15 CONDITIONS AFFECTING SENIORS HOUSING

(Information is provided in this section only if the conditions of a development consent granted over the subject land limit the occupancy of the development to the kinds of people referred to in State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.)

Note: The Environmental Planning and Assessment Amendment Act 1997 commenced operation on the 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation 1998.

Information is provided only to the extent that Council has been notified by relevant government departments.

149(5) Certificate
This Certificate is directed to the following relevant matters affecting the land

When information pursuant to section 149(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section. Council draws your attention to section 149(6) which states that a council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this certificate.

Note: Interested persons should make their own enquiries as to whether any development consent mentioned in this certificate has lapsed.
This certificate does not contain information relating to Complying Development Certificates.
This certificate may not provide full details of development rights over the land.

* When considering any development application Council must have regard to the Threatened Species Conservation Act 1995. Please note that this legislation may have application to any land throughout the city. Interested persons should make their own enquiries in regard to the impact that this legislation could have on this land.

* The land is affected by a Tree Preservation Order.

Exempt and Complying Development

NOTE: For development to be "Exempt Development" or "Complying Development" it MUST comply with the requirements specified within Penrith Local Environmental Plan No. 255 – Exempt and Complying Development, and Penrith Development Control Plan 2006 Part 5 Exempt and Complying Development.

Exempt Development

Advertisement / Signs

- Advertisement displaying a message changed from that displayed by a previously approved advertisement.
- Advertisement erected on land zoned Rural Conservation under SREP No. 13 – Mulgoa Valley; or land zoned Agriculture Protection or Rural under SREP No. 25 – Orchard Hills.
- Advertisement within a site being a sign which is not visible from outside the site on which it is displayed.
- Advisory or directional sign (traffic directional, street signs).
- Business identification sign.
- Exhibition village sign being an advertisement erected on a property on which Council has approved an "exhibition home or homes".
- Public notice.
- Real estate sign.
- Sponsorship advertising in sporting fields or grounds.
- Temporary sign.

Minor Ancillary Development

- Access ramps for people with disabilities.
- Aerials and antennae but not including satellite dishes. (Domestic purposes only.)
- Air conditioners and exhaust fans for existing dwelling house.
- Awning, canopy or stormblind attached to existing dwelling house.
- Aviary (an enclosure in which birds are kept for domestic purposes, not including poultry or pigeons).
- Barbecue associated with existing dwelling or dwelling house.
- Bollards erected for security purposes to existing business premises, office premises, or shop.
- Bridges and staircases in Penrith City Council's public parks and recreation areas.
- Cabana or gazebo.
- Carport for existing dwelling house.
- Childproof enclosures for dangerous dogs or restricted dogs as defined under the Companion Animals Act, 1998.
- Clothes line or hoist for domestic purposes.
- Cubby house at ground level.
- Deck or patio attached to existing dwelling house.
- Flag pole not to be used for the display of corporate flags for the purposes of advertisement.
- Garden shed, greenhouse, and the like.
- Goal posts, sightscreens and similar ancillary sporting structures on sporting or playing fields (excludes grandstands, dressing sheds and the like).
- Isolation swimming pool safety fencing for existing pools installed prior to the 1 August 1990, for domestic properties.
- Lighting of Penrith City Council's sporting or playing fields.
- Minor external repairs to existing dwelling or dwelling house.

Minor Ancillary Development (cont.)

- Minor internal (non-structural) alterations to existing business or office premises, and shops (other than food shop, take-away food shop or restaurant).
- Minor internal (non-structural) alterations to existing dwelling or dwelling house.
- Outdoor eating area in conjunction with a restaurant or refreshment room.
- Outdoor trading area in conjunction with an approved shop.
- Park and street furniture (seats, bins, picnic tables, minor shelters and bus shelters) by Penrith City Council.
- Pergola (no roof covering).
- Playground equipment on land classified as Community Land by Penrith City Council.
- Privacy screen for domestic purposes on a residential property.
- Re-cladding of walls to existing dwelling, dwelling house, ancillary residential or rural building.
- Replace or repair existing roof to a dwelling, dwelling house, ancillary residential or rural building.
- Retaining walls required as a result of excavations associated with the construction of a building or structure.
- Satellite dish for domestic purposes.
- Screen enclosure attached to existing dwelling house.
- Shade structure to be erected on land owned by Penrith City Council.
- Skylight or rooflight for existing dwelling or dwelling house.
- Solar water heater, solar panels and solar lighting.
- Tennis court for private / non-commercial use on a rural zoned property and associated with a dwelling house.
- Waste storage container (waste / skip bin) temporarily being placed in a public place.
- Water heater excluding solar systems.
- Windows, glazed areas and external door replacement for existing dwelling, dwelling house, or other ancillary residential building.
- Water storage tank.
  - In Residential zones (water tanks at or above ground level).
  - In Rural zones (water tanks at or above ground level, or below ground level).
  - On land owned, controlled or managed by Penrith City Council (water tank at or above ground level.)

Use of Land or Building.

- Agriculture not including aquaculture, dams, intensive animal industries and intensive horticulture establishments.
- Ancillary building associated with the agricultural use of the land.
- Bed and breakfast establishment in existing dwelling house.
- Class 9b building for the purpose of a public meeting.
- Family day-care home in existing dwelling house.
- Home activity or home occupation in existing dwelling or dwelling house.
- New use of existing business premises or office premises to another business premises or office premises.
- New use of existing business premises to another business premises.
- New use of existing shop to another shop (other than a food shop, take-away food shop or a shop trading principally in bulky goods).
- Temporary use of existing building as a place of public entertainment.

Penrith Local Environmental Plan No 258 – Consent for Dwelling Houses and Other Development

1 Name of plan

This plan is *Penrith Local Environmental Plan No 258 – Consent for Dwelling Houses and Other Development.*

2 Aims of plan

This plan aims to:

(a) require development consent for dwelling houses on residentially zoned land within the City of Penrith, and

(b) require development consent for dwelling houses on land within the Non-urban zone under the *Penrith Planning Scheme Ordinance* and on land within the Special Business zone under *Penrith Local Environmental Plan 1997 (Penrith City Centre),* and

(c) require development consent for dwelling houses attached to and used in conjunction with shops on land within the Neighbourhood Business zone under the *Penrith Planning Scheme Ordinance,* and

(d) require development consent for the following:

(i) the erection of a building or structure ordinarily associated with a dwelling house,
(ii) a change of building use,

Note. At the commencement of this plan, **a change of building use** meant a change of use of a building from a use that the *Building Code of Australia* recognises as appropriate to one class of building to a use that the *Building Code of Australia* recognises as appropriate to a different class of building.

(iii) demolition of a building or structure,
(iv) carrying out structural alterations to a building, internal alterations to a building, or external building work in association with business premises, a bed and breakfast establishment, office premises, commerical premises or take away food shops,
(v) the subdivision of land,

to the extent to which such development does not already require development consent because of another environmental planning instrument in order to be carried out.

3 Land to which plan applies

This plan applies to all land within the City of Penrith.

4 Relationship to other environmental planning instruments

(1) In the event of an inconsistency between this plan and any other local environmental planning instrument or deemed environmental planning instrument, this plan shall prevail to the extent of the inconsistency, subject to section 36 (4) of the Act.

(2) This plan amends:

(a) *Penrith Planning Scheme Ordinance* in the manner set out in Schedule 1,

(b) *Penrith Local Environmental Plan 1997 (Penrith City Centre)* in the manner set out in Schedule 2, and

(c) *Penrith Local Environmental Plan 1998 (Urban Land)* in the manner set out in Schedule 3.

(3) This plan does not affect the application of:

(a) *State Environmental Planning Policy No 3 – Castlereagh Liquid Waste Disposal Depot,*

(b) *State Environmental Planning Policy No 27 – Prison Sites,*

(c) *Sydney Regional Environmental Plan No 9 – Extractive Industry,*

8 Subdivisions require development consent

(1) A subdivision of land must not be carried out without development consent.

(2) This clause applies if the subdivision of land:

(a) does not require development consent because of another environmental planning instrument, and

(b) is not prohibited by another environmental planning instrument, and

(c) is not identified in *Penrith Local Environmental Plan No 255 – Exempt and Complying Development* as exempt development, and

(d) does not involve Crown building work as defined in section 116G of the Act.

Schedule 1 Amendment of Penrith Planning Scheme Ordinance

(Clause 4 (2) (a))

[1] Clause 4 Interpretation
Omit the definition of ***Country dwelling.***

[2] Clause 26 Erection or use of buildings or works
Omit "country dwellings;" from Column III for Zone No 1 of the Table to the clause.

[3] Clause 26, Table
Omit "dwelling-houses other than country dwellings and rural dwellings;" from Column V for Zone No. 1.

[4] Clause 26, Table
Omit "Dwelling-houses other than semi-detached and terrace buildings." from Column III for Zone No 2(a).

[5] Clause 26, Table
Omit "Residential buildings." from Column III for Zone No 2 (b).

[6] Clause 26, Table
Omit "Dwelling-houses other than semi-detached or terrace buildings." from Column III for Zone No 2 (c).

[7] Clause 26, Table
Omit ";dwelling-houses attached to and used in conjunction with shops" from Column III for Zone No 3 (c).

[8] Clause 26, Table
Omit "Purposes" from Column IV for Zone No 3(c).

Insert instead "Buildings or other structures ordinarily associated with dwelling houses; changes of building use (as defined in the *Environmental Planning and Assessment Act 1979)*; dwelling-houses attached to and used in conjunction with shops; demolition of buildings or other structures; land uses and premises".

[9] Clause 26, Table
Insert "; structural or internal alterations to, or external building work in association with, commercial premises or refreshment rooms" after "roads" in Column IV for Zone No 3(c).

[10] Clause 38 Development in residential zones
Omit the clause.

[11] Clause 46 Variation of area required for country dwelling
Omit the clause.

Penrith Local Environmental Plan 1999 (Flora and Fauna Conservation)

under the

Environmental Planning and Assessment Act 1979

I, the Minister for Urban Affairs and Planning, make the following local environmental plan under the *Environmental Planning and Assessment Act 1979*. (P99/.....)

Minister for Urban Affairs and Planning

Sydney, 1999.

PART 1 - PRELIMINARY

1. **Title**

This plan may be cited as "Penrith Local Environmental Plan No 1999 (Flora and Fauna Conservation)".

2. **Aims, objectives, etc.**

(1) The general aims of this plan are:

(a) to protect and preserve native vegetation and natural biological diversity in the City of Penrith as a major contribution to the achievement of ecologically sustainable development; and

(b) to improve the condition of existing native vegetation and encourage the revegetation and rehabilitation of land with appropriate native vegetation management; and

(c) to rationalise vegetation management controls in certain environmental planning instruments applying to non urban areas to ensure a consistent approach to the control and management of biological resources; and

(d) to manage exotic vegetation in accordance with its cultural and landscape significance; and

(e) to protect native vegetation and existing landforms for their scenic values, and to retain the unique visual identity of the landscape; and

(f) to promote the management of native vegetation in a manner which is compatible with its conservation status; and

(g) to identify and maintain flora and fauna corridors between remnant areas of native vegetation.

(3) The objectives of the flora and fauna corridors and native vegetation areas are set out in Part 2.

3. **Land to which plan applies**

This plan applies to non-urban land within the City of Penrith which is shown edged by a heavy black line on the map.

4. **Relationship with other environmental planning instruments, etc**

(1) This plan affects the provisions of Penrith Planning Scheme Ordinance, local environmental plans, and deemed environmental planning instruments in the manner set out in Schedule 1.

(2) Clauses 6 and 10 of State Environmental Planning Policy No.4 - Development without Consent do not apply to a flora and fauna corridor within the meaning of this plan.

(3) Nothing in this plan affects the application of Penrith Local Environmental Plan 1991 (Environmental Heritage Conservation) to land to which this plan applies.

5. **Interpretation**

(1) Terms used in this plan which are defined in Schedule 2 have the meanings set out in that Schedule.

(2) In this plan:

(a) a reference to a building or place used for a purpose includes a reference to a building or place intended to be used for the purpose, and

(b) a reference to a map is to a map kept in the office of the council.

PART 2 – LAND USE CONTROLS

6. **Flora and fauna corridors**

(1) This clause applies to the land shown distinctively marked by cross-hatching on the map.

(2) The objectives of the flora and fauna corridors are:

(a) to provide effective links between native vegetation areas within the Penrith local government area and other adjoining local government areas; and

(b) to promote the unhindered movement of native animals and plants by limiting the density of development, or by modifying development; and

(c) to facilitate the rehabilitation of flora and fauna corridors to maintain and increase fauna habitat; and

(d) to ensure that clearing or other development takes into account the objectives of this plan, and that measures are taken to implement the objectives; and

(e) to protect significant native vegetation outside conservation reserves.

(3) For the purpose of this clause, "work" means:

(a) erection of any structure or fence on the land; and
(b) removal of soil, rock or any natural material from the land; and
(c) deposit of soil, rock or any material on the land; and
(d) destruction, removal or clearing of native vegetation on the land; and
(e) alteration to natural watercourse or drainage; and
(f) cultivation, slashing or underscrubbing; and
(g) bushfire hazard reduction; and
(h) irrigation; and
(i) destruction of exotic vegetation,

but does not include the carrying out of work for the purposes of maintaining existing structures and driveways.

(4) A person must not carry out development or work on land to which this clause applies except with the consent of the council.

(5) Except as otherwise provided by this plan, the council must not grant consent to work on land to which this clause applies that, in the opinion of the council, is contrary to one or more aims of this plan, or one or more objectives of this clause.

(6) Subject to subclause (5), the council must not consent to development on land, unless it has considered a flora and fauna assessment for that land.

(7) The council must not grant consent to development on land to which this clause applies unless it is of the opinion that the proposed development has taken into account the following matters:

(a) the effect of clearing, including bushfire mitigation measures on flora and fauna species existing on or likely to utilise the land; and
(b) the presence of threatened species, populations and ecological communities in accordance with the Act; and
(c) the local and regional significance of the vegetation; and
(d) any measures to be taken to ameliorate any impacts; and
(e) the significance of any flora and fauna species, population or ecological community listed under the Threatened Species Conservation Act 1995; and
(f) the requirements of any species recovery plan under the Threatened Species Conservation Act 1995.

(8) Subject to subclause (7), the council must not consent to development on land to which this plan applies unless the type and location of that development is generally in accordance with any development control plan applying to the land.

(9) Despite subclause (8), the council may consent to a development which is not generally in accordance with a development control plan where it is of an opinion that the development otherwise satisfies the objectives of that plan.

(10) Where a development application is made in respect of land to which a development control plan having provisions about the type and location of development does apply, in determining the application the council:

(a) must have regard to the provision of any general development control plan applying to the land; and
(b) may have regard to any overall plan for development of an area, including the land, prepared by or on behalf of the applicant.

7. **Native vegetation areas**

(1) This clause applies to the land shown distinctively marked by stippling on the map.

(2) The objectives of the native vegetation areas are:

(a) to prevent inappropriate clearing of native vegetation not located within flora and fauna corridors; and
(b) to protect flora and fauna habitat and maintain natural ecosystem processes; and
(c) to encourage and promote native vegetation management; and
(d) to promote sustainable agriculture; and
(e) to promote and maintain a diverse local rural landscape and associated amenity.

(3) A person must not clear native vegetation on land to which this clause applies except with the consent of the council.

(4) Despite subclause (3), consent is not required where native vegetation:

(a) is a danger to life or property; or
(b) is less than five metres from a building or work approved by the council.

Schedule 2 - Definitions

(Clause 5)

"biological diversity" means the variety of life forms, the different plants, animals and micro organisms, the genes they contain and the ecosystem of which they form a part; [1]

"bushfire hazard reduction" means a reduction or modification (by controlled burning or mechanical or manual means) of material that constitutes a bushfire hazard; [2]

"clearing" means any one or more of the following:
(a) cutting down, felling, thinning, logging or removing native vegetation,
(b) killing, destroying, poisoning, ringbarking, uprooting, or burning of native vegetation,
(c) severing, lopping or lopping branches, limbs, stems or trunks of native vegetation,
(d) substantially damaging or injuring native vegetation in any other way; [3]

"corridor" applies to both fauna and flora and means areas, or networks of areas, of native vegetation which allow migration of plants and animals, and provide examples of local biological diversity and habitat for various species in their own right;

"council" in relation to the carrying out of any proposed development, means the Council of the City of Penrith;

"development" has the meaning as in the Act;

"exotic vegetation" means one or more plant species of vegetation that did not occur in the City of Penrith before European settlement and is:
(a) a living perennial plant which exceeds 5 metres in height, being the distance measured vertically between the horizontal plane of the base of the plant which is immediately above the ground and the horizontal plane of the uppermost point of the plant; or
(b) individual trees or gardens listed in any Significant Tree and Garden Register or development control plan, adopted by the council;

"flora and fauna corridor" means that land shown distinctively marked with hatching on the map;

[1] Commonwealth State of the Environment Report 1996
[2] SEPP 4 - excludes "chemical".
[3] Native Vegetation Conservation Act 1997

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"flora and fauna impact assessment" means a survey and analysis of habitat by an appropriately qualified person which includes:
(a) a written and mapped description of the plant and animal species present and their habitat;
(b) a description of the proposed activities or development including measures to mitigate adverse impacts; and
(c) an objective assessment of the whether the development is likely to significantly affect threatened species, populations or ecological communities.

"habitat" means an area or areas occupied, or periodically or occasionally occupied, by a native species, population, or ecological community and includes any biotic or abiotic component;

"indigenous vegetation" means one or more plant species of vegetation that existed in the City of Penrith before European settlement;

"plan of management" means:
(a) a plan of management for community land adopted under the Local Government Act, 1993; or
(b) a plan of management relating to a Crown Reserve adopted under the Crown Lands Act, 1989; or
(c) a plan of management relating to a wildlife refuge approved under the National Parks and Wildlife Act, 1974; or
(d) a plan of management relating to a conservation agreement entered into under the National Parks and Wildlife Act, 1974; or
(e) a bushfire management plan adopted under the Bushfire Management Act, 1974; or
(f) a management statement relating to land under community title registered under the Community Land (Management) Act, 1989; or
(g) a plan of management prepared as a condition of development consent; or
(h) a regional vegetation plan management plan adopted under the Native Vegetation Conservation Act 1997; or
(i) a plan of management prepared by or on behalf of a landowner;

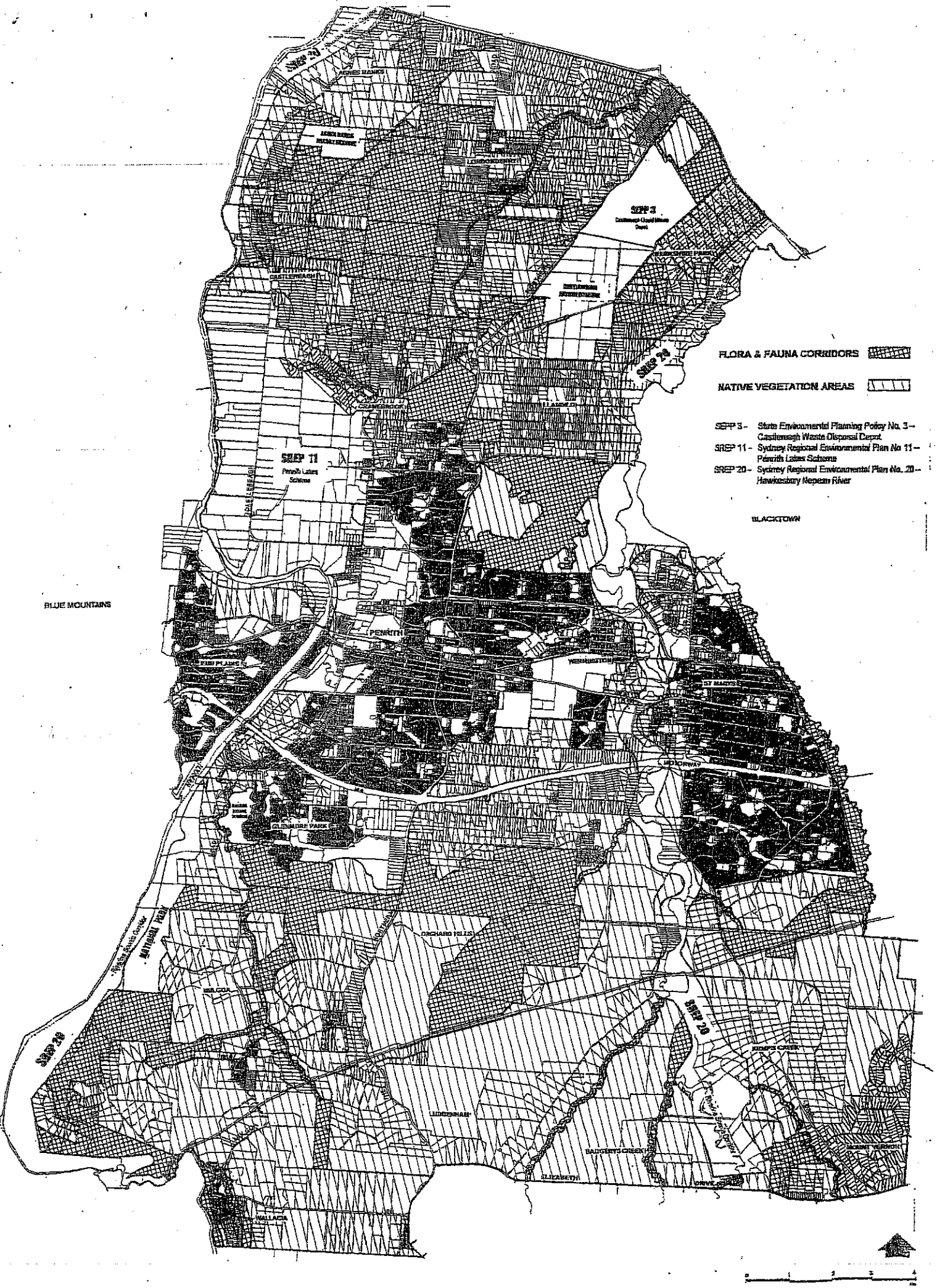
"native vegetation" means any of the following types of indigenous vegetation:
(a) a tree or trees,
(b) a shrub or shrubs,
(c) understorey plants,
(d) groundcover,
(e) plants occurring in a wetland; [4]

"native vegetation area" means that land shown distinctively marked with stippling on the map;

"the Act" means the Environmental Planning and Assessment Act 1979;

"the map" means the map marked "Penrith Local Environmental Plan 1998 (Flora and Fauna Conservation)" as amended.

[4] Native Vegetation Conservation Act 1997



Note

The additional planning instruments referred to on this map

FLORA & FAUNA CONSERVATION AREAS

PENRITH LOCAL ENVIRONMENTAL PLAN 1994

(ERSKINE PARK EMPLOYMENT AREA)

Government Gazette No. 156 of 25th November 1994.
Amended 8th January 1999.

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

PENRITH LOCAL ENVIRONMENTAL PLAN 1994

(ERSKINE PARK EMPLOYMENT AREA)

I, the Minister for Planning, in pursuance of section 70 of the Environmental Planning and Assessment Act 1979, make the local environmental plan set out hereunder (P91-02016-PC).

ROBERT WEBSTER MLC
Minister for Planning

Sydney, 16 November, 1994

PART 1

PRELIMINARY

Citation.

1. This plan may be cited as Penrith Local Environmental Plan 1994 (Erskine Park Employment Area).

Aims, objectives etc.

2. (1) The aims of this plan are:

(a) to make land available for economic and employment generating development in the City of Penrith; and

(b) to promote development which is consistent with the council's vision for the City of Penrith contained in its Strategic Management Plan, namely, one of a region having a harmony of urban and rural qualities with a strong commitment to environmental protection and enhancement; and

(c) to promote development which observes responsible and environmentally sound management practices to minimise any adverse environmental impact of that development on surrounding localities.

(2) The objectives of this plan are:

(a) to provide a planning framework which allows development control plans and a staging plan to supplement the controls embodied in this plan; and

(b) to preserve the amenity of the residential communities of Erskine Park and St Clair; and

(c) to require development to be assessed in accordance with, and to observe, sound environmental planning principles; and

(d) to require development to observe relevant environmental performance criteria; and

(e) to promote the development of land for industrial land uses which require a variety of land types; and

(f) to promote a variety of employment based activities whilst protecting the viability of existing business centres; and

(g) to create an environmentally attractive and safe work environment; and

(h) to promote development which is efficient in terms of transportation, energy and land utilisation; and

(i) to make land available to accommodate all required special land uses including roads, drainage and other infrastructure; and

(j) to facilitate the appropriate provision of, or of funding for, major infrastructure works; and

(k) to limit the potential risk to life and property from flood events; and

(l) to maximise conservation of urban bushland; and

(m) to prohibit offensive and hazardous industries and other industries specified in this plan; and

(n) to prohibit development of land for any purpose if, as a result of carrying out the development, there will be direct vehicular access between that land and either Erskine Park Road or Mamre Road.

(3) The council must consider the aims and objectives of the plan in determining development applications. This plan also includes objectives for each zone.

Land to which plan applies.

3. (1) This plan applies to the land within the City of Penrith which is shown edged by a heavy black line on the map.

(2) This plan does not apply to land referred to on the map as "Deferred Matter", despite subclause (1).

(3) This plan does not apply to the land to which the following instruments apply:

Penrith Local Environmental Plan 1998 (Urban Land).

(Clause 3 (3) added G.G. No. 4 of 8/1/99.)

Relationship to other plans.

4. (1) With the exception of Penrith Local Environmental Plan 1991 (Environmental Heritage Conservation), this plan repeals all other local environmental plans and deemed local environmental plans in so far as they relate to land to which this plan applies.

(2) Nothing in this plan affects the application to land to which this plan applies of Penrith Local Environmental Plan 1991 (Environmental Heritage Conservation).

(3) This plan prevails over Sydney Regional Environmental Plan No. 9 - Extractive Industry to the extent to which that instrument is inconsistent with this plan.

(4) Except as otherwise provided by this clause, this plan does not affect the operation of State Environmental Planning Policies and Regional Environmental Plans.

(5) Development consent must not be granted unless the council is satisfied that the proposed development is consistent with the provisions, and the objectives, of any development control plan prepared in respect of the land to which the development application relates.

Model Provisions.

5. Clause 35 of, and Schedule 1 to, the Environmental Planning and Assessment Model Provisions 1980 are adopted for the purposes of this plan.

Definitions.

6. (1) All definitions used in this plan are set out in Schedule 1.

(2) In this plan:

(a) a reference to a building or place used for a purpose includes a reference to a building or place intended to be used for the purpose; and

(b) a reference to a map is a reference to a map deposited in the office of the council.

Consent authority.

7. The council is the consent authority for all development applications made in relation to land to which this plan applies.

PART 2

THE LAND USE ZONES IN THIS PLAN

Zones indicated on the map.

8. The land to which this plan applies is divided into four zones and land in each zone is identified on the map in the following manner:

Zone No. 1(f) (Floodway)	-	coloured light brown and lettered 1(f);
Zone No. 4(e) (Employment)	-	coloured purple and lettered 4(e);
Zone No. 4(e1) (Employment – Restricted)	-	coloured purple and lettered 4(e1);
Zone No. 5(c) (State Roads and State Road Widening)	-	broken black band between firm black lines and lettered 5(c).

Zone objectives and development control table.

9. (1) For each of the zones in the development control Table which follows are indicated:

(a) the objectives of the zone;

(b) land uses for the purposes of which:

(i) development may be carried out without development consent;

(ii) development may be carried out only with development consent; and

(iii) development is prohibited.

(2) The council must consider the zone objectives in determining development applications.

(3) Except as otherwise provided by this plan, development consent must not be granted by the council if the proposed development is contrary to one or more aims and objectives of the plan, and one or more objectives of the zone within which the development is proposed to be carried out.

TABLE

ZONE No. 1(f) (FLOODWAY ZONE)

1. Objectives of Zone

The objectives are:

(a) to prevent the introduction of unsuitable land uses on the land identified by the council as being likely to be inundated by a 1% AEP flood in Ropes Creek; and

(b) to limit the potential risk to life and property in the event of a flood in Ropes Creek; and

(c) to protect and enhance the scenic quality and rural character of the area; and

(d) to promote development that is compatible with the environmental capabilities of the land; and

(e) to prevent the unnecessary removal of trees from the land; and

(f) to promote development that does not have an adverse impact on the flood characteristics of Ropes Creek.

2. Without development consent

Nil.

3. Only with development consent

Any land use other than those included in Item 4.

4. Prohibited

Amusement parks; animal establishments; boarding houses; business premises; camp or caravan sites; general stores; generating works; hotels; industries listed in Schedule 2; intensive agriculture; intensive livestock keeping establishments; junk yards; light industries; materials recycling yards; motels; motor showrooms; offensive or hazardous industries; offensive or hazardous storage establishments; office premises; residential flat buildings; shops; transport terminals; vehicle body repair workshops; vehicle repair stations; warehouse or distribution centres; waste disposal.

ZONE No. 4(e) (EMPLOYMENT ZONE)

1. Objectives of Zone

The objectives of this zone are:

(a) to prohibit certain development which is likely to have an adverse environmental effect on the amenity of adjoining localities; and

(b) to provide opportunities for a diverse range of employment generating activities; and

(c) to accommodate office and retail activities which are primarily intended to service persons working in the Erskine Park Employment Area; and

(d) to permit development for the purposes of recreation facilities, child care centres or community facilities in association with, or independent of, other permitted development to serve the needs of the workforce of the Area and the adjoining residential communities; and

(e) to prohibit development of land for any purpose if, as a result of carrying out the development, there will be direct vehicular access between that land and either Erskine Park Road or Mamre Road; and

(f) to promote development of land with frontage to Mamre Road and Erskine Park Road if the buildings or works resulting from the carrying out of the development will, by their architectural and landscape design, enhance the rural scenic character of those roads and their roles as gateways to the City of Penrith.

2. Without development consent

Nil.

3. Only with development consent

Any land use other than those included in Item 4.

4. Prohibited

Amusement parks; boarding houses; camp or caravan sites; dwellings (other than those used in conjunction with other land uses that are not prohibited in this zone and situated on the land on which such other uses are conducted); general stores; generating works; industries listed in Schedule 2; junk yards; motor showrooms; offensive or hazardous industries; offensive or hazardous storage establishments; office premises (other than those ancillary to, and used in conjunction with, another land use that is not prohibited in this zone or which are primarily intended to service persons working in the Erskine Park Employment Area); shops (other than those primarily intended to service persons working in the Erskine Park Employment Area).

ZONE No. 4(e1) (EMPLOYMENT - RESTRICTED ZONE)

1. Objectives of Zone

The objectives of this zone are:

(a) to prohibit certain development which is likely to have an adverse environmental effect on the amenity of adjoining localities; and

(b) to promote development which does not have an adverse environmental effect on the adjoining residential and rural communities arising from air, noise or other pollution; and

(c) to permit retail activities which are:

(i) compatible with the concept of the employment area; and

(ii) unlikely to prejudice the viability of existing business centres,

or are primarily intended to service persons working in the Erskine Park Employment Area; and

(d) to permit office development of a type which:

(i) would not be readily located in a traditional business zone; and

(ii) would be unlikely to prejudice the viability of existing business centres; and

(e) to permit development for the purposes of recreation facilities, child care centres and community facilities in association with, or independent of, other permitted development to serve the needs of the workforce of the Area and the adjoining residential and rural communities; and

(f) to prohibit development of land for any purpose if, as a result of carrying out the development, there will be direct vehicular access between that land and either Erskine Park Road or Mamre Road; and

(g) to promote development of land with frontage to Mamre Road and Erskine Park Road if the buildings or works resulting from the carrying out of the development will, by their architectural and landscape design, enhance the rural scenic character of those roads and their roles as gateways to the City of Penrith.

2. Without development consent

Nil.

3. Only with development consent

Any land use other than those included in Item 4.

4. Prohibited

Amusement parks; boarding houses; camp or caravan sites; dwellings (other than those used in conjunction with other land uses that are not prohibited in this zone and situated on the land on which such other uses are conducted); general stores; generating works; industries listed in Schedule 2; junk yards; materials recycling yards; motor showrooms; offensive or hazardous industries; offensive or hazardous storage establishments; shops (other than those primarily intended to service persons working in the Erskine Park Employment Area or shops trading principally in bulky goods or motor vehicle parts and accessories); vehicle body repair workshops; waste disposal.

ZONE No. 5 (c) (STATE ROADS AND STATE ROAD WIDENING ZONE)

1. Objective of zone

The objective is to reserve land which will be required for state roads and state road widening purposes.

2. Without development consent

Nil.

3. Only with development consent

Drains; landscaping; parking areas; roads; road widening; site filling; utility installations.

4. Prohibited

Any land use other than those included in Item 3.

PART 3 - SPECIAL PROVISIONS APPLYING GENERALLY

Environmental considerations.

10. (1) Notwithstanding any other provision of this plan, the council must not consent to the carrying out of development on land to which this plan applies where, in the opinion of the council, it will have an adverse environmental effect on adjoining residential or rural lands.

(2) In deciding whether a development will have an adverse environmental effect, the council must take into consideration:

(a) any adverse impact of the carrying out of that development on the existing or likely future amenity of adjoining residential or rural lands likely to be caused by air, water, noise or any other pollution; and

(b) the effect of the development on the visual amenity of adjoining residential and rural lands; and

(c) the effect of the development on water quality through particulate or chemical emissions or sedimentation and the measures proposed to improve the existing water quality and to minimise any such effect; and

(d) the extent of likely air emissions from the development and the measures proposed to improve the existing air quality and to minimise and control those emissions; and

(e) waste management needs for the development and the adequacy of proposed waste management measures; and

(f) the hazardous nature and quantities of any materials or substances to be used or stored as part of the development; and

(g) proposed ongoing monitoring procedures and management plans for the development, to mitigate any adverse environmental effects.

Efficiency considerations.

11. In determining whether to grant consent for development on land to which this plan applies, the council must take into consideration:

(a) the energy efficiency of the proposal in terms of building design, solar access, site layout, technology and the like; and

(b) the extent to which the development maximises opportunities for the recycling of waste; and

(c) whether the development makes the most efficient use of the land; and

(d) whether the development promotes efficiency in terms of:

(i) the overall transport network within the Erskine Park Employment Area; and

(ii) traffic, parking and access; and

(iii) public transport.

Subdivision of land.

12. (1) A person must not subdivide land to which this plan applies without the consent of the council.

(2) A person must not open a road on land to which this plan applies without the consent of the council.

(3) The council must not grant consent to the subdivision of land to which this plan applies if the subdivision would create an allotment containing land in more than one zone.

Staging plan for provision of services.

13. (1) In this clause "services" includes roads, water, sewerage, electricity, telephone, gas and trunk drainage services.

(2) The council must not grant consent to any development on land to which this plan applies unless the proposed development, and the way in which it will be carried out, will be in accordance with any staging plan and management plan for the planning, funding and implementation of services contained within a development control plan applying to the land.

Provision of services.

14. The council must not grant consent to the carrying out of development on land to which this plan applies unless arrangements have been made that are satisfactory to the Water Board for the amplification and reticulation of water services to the land, and the provision of sewerage services to the land.

Drainage.

15. The council must not grant consent to any development on land to which the plan applies unless:

(a) arrangements satisfactory to the council have been made for the implementation of that part of the council's Trunk Drainage and Water Quality Management Scheme to which the land drains; and

(b) the development conforms with the provisions of the council's Trunk Drainage and Water Quality Management Scheme.

Advertising.

16. A person must not erect an advertisement on land to which this plan applies except with the consent of the council.

Tree preservation.

17. (1) In this clause, "tree" means:

(a) a living perennial plant which:

(i) has one or more self supporting trunks, any one or more of which has a circumference of 30cm or more (at a height of 40cm above the ground); or

(ii) has a height of 3 metres or more, or a branch spread of more than 3 metres; or

(b) any tree or plant, irrespective of size, listed in a register of significant trees, which is a register kept at the office of the council;

(c) any palm, cycad or tree fern.

(2) A person is prohibited from ringbarking, cutting down, digging up, topping, lopping, removing or injuring by mechanical or chemical means any tree, and from taking any other action which could cause the death of any tree, except with the consent of the council.

(3) Notwithstanding subclause (2), the consent of the council is not required:

(a) for the pruning of a tree for the purpose of its regeneration or shaping; or

(b) for necessary action in relation to a tree to prevent imminent personal injury or imminent damage to property; or

(c) for the taking of appropriate action where the tree has otherwise become dangerous, but only if 7 days' notice of the action proposed has been given to the council; or

(d) for the removal of noxious plants, being plants listed as noxious plants in a pamphlet published by the Hawkesbury River County Council and available to the public in the office of the council.

(4) This clause does not apply to tree trimming, tree removal or other similar measures carried out by an electricity supply authority, which is in accordance with any tree management agreement approved by the council.

PART 4

SPECIAL PROVISIONS APPLYING TO SPECIFIC LAND

Flood liable land.

18. (1) This clause applies to the land within Zone No. 4(e) or 4(e1) shown diagonally hatched on the map.

(2) The council must not grant consent for development on the land to which this clause applies for purposes other than:

(a) landscaping; or

(b) a parking area; or

(c) the outdoor storage of goods, materials or products.

(3) The council must not grant consent to the carrying out of development on land to which this clause applies unless it is satisfied that:

(a) the development will not have a significant adverse effect on the characteristics of floods in Ropes Creek; and

(b) the development is not likely to result in any significant risk to life or property as a result of a standard flood.

(4) Development on land to which this clause applies may be carried out only if the floor level of any building or outdoor storage area that will result from the proposed development will be located above the standard flood level. This subclause does not apply to development for the purpose of structures used for drainage, flood mitigation or water quality management.

Development in Zone No. 4(e1).

19. (1) This clause applies to land within Zone No. 4(e1).

(2) The council must not grant consent to development of land within Zone No. 4(e1) unless it is satisfied that:

(a) wherever appropriate, proposed buildings are compatible with the height, scale, siting and character of existing residential buildings in the vicinity; and

(b) goods, plant, equipment and other material resulting from the development are to be stored within a building or will be suitably screened from view from residential buildings and associated land; and

(c) the elevation of any building facing, or significantly exposed to view from, land on which a dwelling house is situated has been designed to present an attractive appearance; and

(d) noise generation from fixed sources or motor vehicles associated with the development will be effectively insulated or otherwise minimised; and

(e) the development will not otherwise cause nuisance to residents, by way of hours of operation, traffic movement, parking, headlight glare, security lighting or the like; and

(f) windows facing residential areas, or from which residential areas might be viewed, have been treated to avoid overlooking of private yard space or windows in residences; and

(g) the development will provide adequate off-street parking, relative to the demand for parking likely to be generated; and

(h) the site of the proposed development will be suitably landscaped, particularly between any building and the street alignment.

Retailing in employment zones.

20. (1) Nothwithstanding any other provision of this plan, the council may grant consent to development on land within Zones Nos. 4(e) and 4(e1) for the purpose of shops only where it is satisfied that the development is primarily intended to provide services to people working in the Erskine Park Employment Area.

(2) The council must not grant consent to development on land within Zone No. 4(e1) for the purpose of a hypermarket, supermarket, department store, discount department store or small specialty items shop or for any other purpose which, in the opinion of the council, would be more appropriately located in an existing business centre.

(3) The council must not grant consent to the carrying out of development on land within Zone No. 4(e1) for the purposes of a shop trading principally in bulky goods unless it is satisfied that:

(a) the development would not be more suitably carried out in a business centre in the locality; and

(b) the development is unlikely to have an adverse effect on the viability of any other business centres in the locality; and

(c) the development is of a type appropriate to the objectives of an employment zone, or to the general character of existing development within the locality.

(4) This clause does not apply to the retailing on land of goods produced or stored on the same land where such retailing is minor and ancillary to a manufacturing or storage use.

Office premises in Zone No. 4(e1).

21. Notwithstanding any other provisions of this plan, the council may grant consent to development on land within Zone No. 4(e1) for the purpose of offices only where it is satisfied that:

(a) land suitable for development for that purpose would not be readily available in an existing business zone; and

(b) development on the land for that purpose would be unlikely to prejudice the viability of existing business centres.

Convenience stores.

22. So much of the gross floor area of a convenience store as is used for the retailing of goods on land to which this plan applies must not exceed 200 square metres.

Community use of school sites etc.

23. Notwithstanding any other provision of this plan, a person may, with the consent of the council, carry out development on land to which this plan applies involving:

(a) the community use of the facilities and sites of schools, colleges and other educational establishments; and

(b) the commercial operation of those facilities and sites for community purposes; and

(c) the carrying out of development for community uses on land used for the purposes of schools, colleges or other educational institutions, whether or not the development is ancillary to those purposes.

Transmission easement.

24. (1) This clause applies to the land to which this plan applies affected by the Pacific Power transmission easement located adjacent to the northern boundary of the Erskine Park Employment Area.

(2) The council must not consent to the carrying out of development (with the exception of landscaping) on land affected by the transmission easement.

(3) The council must require appropriate landscape treatment of land affected by the transmission easement as part of any development of land which includes the transmission easement.

(4) Before granting consent to any landscape treatment of the land affected by the easement, the council must ensure that it will be carried out to the council's satisfaction and in accordance with any specific requirements of Pacific Power notified to the council.

Quarry and surrounding land.

25. (1) This clause applies to Lot 9, D.P. 229784, Portion 77 and Portion 85, in the Parish of Melville, Erskine Park.

(2) The council must not consent to development on the land to which this clause applies unless it has taken into consideration a

management plan providing for the restoration of the quarry and the surrounding land, being a plan approved for the time being by the council.

(3) Notwithstanding any other provision of this plan, the council may grant consent to the carrying out of development on the land only if it is satisfied that:

(a) the development will not restrict opportunities for restoration of the quarry and surrounding land; and

(b) the development is in accordance with the management plan providing for restoration; and

(c) the development contributes to restoration work provided for by the management plan.

Acquisition of land reserved for roads.

26. (1) In this Part:

"the corporation" means the corporation constituted by section 8(1) of the Act;

"the RTA" means the Roads and Traffic Authority constituted under the Transport Administration Act 1988;

"vacant land" means land on which, immediately before the day on which a notice under subclause (2) is given, or an application for development consent referred to in clause 27(1) is lodged, there were no buildings other than fences, greenhouses, conservatories, garages, summer houses, private boat houses, fuel sheds, tool houses, cycle sheds, aviaries, milking bails, hay sheds, tables, fowl houses, pig sties, barns or the like.

(2) The owner of any vacant land within Zone No. 5(c) may, by notice in writing, require:

(a) the RTA in the case of land that is included in the 5 year works programme of the RTA current at the time of the receipt of the notice; or

(b) the corporation in any other case,

to acquire the land.

(3) The owner of any land within Zone No. 5(c) that is not vacant may, by notice in writing, require the RTA to acquire the land if:

(a) the land is included in the 5 year works programme of the RTA current at the time of the receipt of the notice; or

(b) the RTA has decided not to give concurrence under clause 27(1) to an application for consent to the carrying out of development on the land; or

(c) the RTA is of the opinion that the owner of the land will suffer hardship if the land is not acquired within a reasonable time.

(4) On receipt of a notice under this clause, the RTA or the corporation, as the case may be, must acquire the land unless the land might reasonably be required to be dedicated for public roads.

Development of land reserved for roads.

27. (1) Notwithstanding the provisions of clause 9, a person may, with the consent of the council and:

(a) in the case of vacant land, with the concurrence of the RTA and the corporation; or

(b) in the case of the land that is not vacant, with the concurrence of the RTA,

carry out development on land within Zone No. 5(c) for a purpose for which development may be carried out on land within an adjoining zone created by this plan.

(2) In deciding whether to grant concurrence to any such development, the RTA and the corporation must take the following matters into consideration:

(a) the need to carry out development on the land for the purposes of classified roads or proposed classified roads;

(b) the imminence of the acquisition of the land by the RTA or the corporation; and

(c) the likely additional cost to the RTA or the corporation resulting from the carrying out of the proposed development.

(3) Land acquired under this Part may be developed, with the consent of the council, for any of the purposes permitted on land within an adjoining zone created by this plan, until such time as it is required for the purpose for which it was acquired.

Development along particular roads.

28. The council must not consent to the development of land within Zone No. 4(e) or 4(e1) for any purpose if, as a result of carrying out the

development, there will be direct vehicular access between that land and either Erskine Park Road or Mamre Road.

SCHEDULE 1 – DEFINITIONS

(Cl.6)

"abattoir" means a building or place used for the slaughter of animals, whether or not animal by-products are processed, manufactured or distributed, and includes a knackery;

"advertisement" means the display of symbols, messages or other devices for promotional purposes or for conveying information, instructions, directions or the like, whether or not the display includes the erection of a structure or the carrying out of a work;

"agriculture" means:

(a) the cultivating of fruit, vegetable or flower crops; or

(b) the keeping or breeding of livestock, bees or poultry or other birds; or

(c) the cultivating of plants in a wholesale plant nursery,

for commercial purposes, but does not include intensive agriculture;

"amusement park" means a place where amusements or mechanical or electronic entertainments are permanently situated;

"animal establishment" means a building or place used for the breeding, boarding, training, or keeping of, or for caring for, animals for commercial purposes, and includes a riding school and veterinary clinic;

"appointed day" means the day upon which this plan takes effect;

"boarding house" means a building or place:

(a) where accommodation, meals and laundry facilities are provided to the residents of the building or place; and

(b) which is not licensed to sell liquor within the meaning of the Liquor Act 1982;

"building" includes any structure or part thereof;

"bulky goods" means large goods which are, in the opinion of the council, of such a size and shape as to require:

(a) a large area for handling, storage or display; and

(b) easy and direct vehicular access so as to allow for their collection by customers,

but does not include food, beverages, clothing, footwear, leisure goods, toys, agricultural products, small electrical appliances or electronic goods;

"business premises" means a building or place in which there is carried on an occupation, profession, light industry or trade which provides a service directly and regularly to the public, but does not include a building or place elsewhere defined in this Schedule;

"camp or caravan site" means a site used for the purpose of:

(a) placing moveable dwellings (as defined in the Local Government Act 1993) for permanent accommodation or for temporary accommodation by tourists; or

(b) the erection, assembly or placement of cabins for temporary accommodation by tourists;

"child care centre" means a building or place used for the purpose of supervising or caring for children which:

(a) caters for 5 or more under school-age children whether or not those children are related to the owner or operator of the child care centre; and

(b) may include an educational function; and

(c) may operate for the purpose of gain,

but does not include a building or place providing residential care for those children;

"classified road" means a road or work declared under Part 5 of the Roads Act 1993 to be a main road, a secondary road, a State highway, a tourist road, a State work, a freeway, a tollway or a controlled access road within the meaning of that Act;

"community facility" means a building or place owned or controlled by a public authority or a body of persons which may provide for the physical, social, cultural or intellectual development or welfare of the local community, but does not include a club registered under the Registered Clubs Act 1976;

"convenience store" means a building or place:

(a) used for the purpose of selling, exposing or offering for sale by retail principally groceries, smallgoods and associated small

items which is open for business in the interests of public convenience at hours beyond the normal trading hours of a general shop (other than a small shop) as prescribed under the Factories, Shops and Industries Act 1962; and

(b) used in conjunction with the sale by retail of petrol, oil and other petroleum products;

"council" means the Council of the City of Penrith;

"drain" means any drain used for removing water other than sewage;

"dwelling" means a room or number of rooms occupied or used, or so constructed or adapted as to be capable of being occupied or used, as a separate domicile;

"dwelling house" means a dwelling which is the only dwelling erected on an allotment of land;

"educational establishment" means a building or place used for education (including teaching) and includes:

(a) a school; and

(b) a tertiary institution, being a university, college of advanced education, teachers' college, technical college or other tertiary college providing formal education which is constituted by or under an Act; and

(c) an art gallery or museum, not used to sell the items displayed therein,

whether or not accommodation for staff and students is provided and whether or not used for the purposes of gain;

"existing ground level" means the level of a site before development is carried out on the site in accordance with this plan;

"extractive industry" means:

(a) the winning or removal of extractive material from land; or

(b) an undertaking, not being a mine, which depends for its operations on the winning of extractive material from the land upon which it is carried on, and includes any washing, crushing, grinding, milling or separating into different sizes of that extractive material on that land;

"extractive material" does not include coal, shale, petroleum, uranium or any mineral within the meaning of the Mining Act 1992;

"floor" means that space within a building which is situated between one floor level and the floor level next above or if there is no floor above, the ceiling or roof above;

"general store" means a shop used for the sale by retail of general merchandise and which may include the facilities of a post office;

"generating works" means a building or place used for the purpose of making or generating gas, electricity or other forms of energy;

"gross floor area" means the sum of the areas of each floor of a building where the area of each floor is taken to be the area within the outer face of the external enclosing walls as measured at a height of 1400 millimetres above each floor level, excluding:

(a) columns, fin walls, sun control devices, awnings and any other elements, projections or works outside the general lines of the outer face of the external walls; and

(b) lift towers, cooling towers, machinery and plant rooms, ancillary storage space and air-conditioning ducts; and

(c) carparking needed to meet any requirements of the council and any internal designated vehicular or pedestrian access thereto; and

(d) space for the loading and unloading of goods; and

(e) internal public arcades and thoroughfares, terraces and balconies with outer walls less than 1400 millimetres high;

"hazardous industry" means an industry which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate it from existing or likely future development on other land in the locality), would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment;

"hazardous storage establishment" means any establishment where goods, materials or products are stored which, when in operation and when all measures proposed to reduce or minimise its impact have been employed (including, for example, measures to isolate it from existing or likely future development on other land in the locality), would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment;

"height" in relation to a building, means the vertical distance measured between natural ground level at any point at which the building is sited and the roof of the topmost floor of the building above that point;

"home industry" means a home occupation undertaken by the permanent residents of the dwelling, whether or not others are also employed;

"home occupation" means the use of a dwelling or of any land comprising, or building erected on, the allotment on which the dwelling is located, for the purpose of an office, light industry, industry or business, but only if:

(a) that use is undertaken by the permanent residents of the dwelling; and

(b) the use does not involve the employment of persons other than those residents; and

(c) the use does not interfere unreasonably in any way with the amenity of adjoining properties or the locality in which the dwelling is situated;

"hotel" means premises specified or proposed to be specified in a hotelier's licence granted under the Liquor Act 1982;

"industry" means:

(a) any manufacturing process within the meaning of the Factories, Shops and Industries Act 1962; or

(b) the breaking up or dismantling of any goods or any article for trade or sale or gain or as ancillary to any business,

but (except in this Schedule) does not include an extractive industry or other land use elsewhere defined in this Schedule;

"intensive agriculture" means any form of agriculture which requires the waste, including faeces, to be disposed of on land which is not simultaneously used for the nurturing of livestock and poultry;

"intensive livestock keeping establishment" means a building or place in which or upon which cattle, sheep, goats, poultry or other livestock are held for the purposes of nurturing by a feeding method other than grazing and, without limiting the generality of the foregoing, includes:

(a) feedlots;

(b) piggeries;

(c) poultry farms; and

(d) fish (including crustacean) farms,

but does not include an animal boarding, breeding or training establishment or land used for the keeping of livestock or poultry intended solely for personal consumption or enjoyment by the owner or occupier of the land;

"junk yard" means land used for the collection, dismantling, salvaging, storage or abandonment of scrap materials, goods, vehicles or machinery and may include the ancillary sale of parts thereof;

"light industry" means an industry, not being an offensive or hazardous industry, in which the processes carried on, the transportation involved or the machinery or materials used do not, in the opinion of the council, interfere with the amenity of the surrounding neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil or otherwise;

"liquid fuel depot" means a depot or place used for the bulk storage for wholesale distribution of petrol, oil, petroleum or other inflammable liquid;

"materials recycling yard" means a building or place used for collecting, dismantling, salvaging, storing and recycling of second hand or scrap materials for the purpose of resale, but does not include a junk yard;

"mine" means an activity which depends for its operation on the winning or removal of any material to which the Mining Act 1992 or the Petroleum (Onshore) Act 1991 applies, and includes the storage and primary processing of the material obtained;

"motel" means premises not being a hotel, used for the temporary or short-term accommodation of travellers;

"motor showroom" means a building or place used for the display or sale of motor vehicles, caravans or boats, whether or not motor vehicle accessories, caravan accessories or boat accessories are sold or displayed;

"offensive industry" means an industry which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate it from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on existing or likely future development on the other land in the locality;

"offensive storage establishment" means any establishment where goods, materials or products are stored which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate it from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on existing or likely future development on other land in the locality;

"office premises" means a building or place used for the purpose of carrying out professional, administrative, clerical or public duties but does not include an office used in conjunction with or ancillary to a land use elsewhere specifically defined in this Schedule;

"parking area" means a building or place, including ground level parking areas or deck parking structures, used for parking vehicles, and includes any associated vehicle manoeuvring areas whether such parking area is used for the purposes of gain or not;

"recreation facility" means a building or place used for sporting activities, recreation or leisure activities, whether or not operated for the purpose of gain, but does not include a building or place elsewhere defined in this Schedule;

"residential flat building" means a building containing three or more dwellings, but does not include a building elsewhere defined in this Schedule;

"road" means a public thoroughfare used for the passage of vehicles or animals and includes a classified road;

"service station" means a building or place used for the fuelling of motor vehicles involving the sale by retail of petrol, oil or other petroleum products, whether or not the building or place is also used for one or more of the following purposes:

(a) the hiring of trailers;

(b) the retail selling or the installing of spare parts and accessories for motor vehicles;

(c) washing and greasing of motor vehicles;

(d) repairing or servicing of motor vehicles;

(e) the retail selling or hiring of small consumer goods,

but does not include a building or place used for vehicle body building or the panel beating or spray painting of vehicles;

"shop" means a building or place used for the purposes of selling, exposing or offering for sale by retail, goods, merchandise or materials, but does not include a building or place elsewhere specifically defined in this Schedule, or a building or place used for anything else specifically defined in this Schedule;

"site filling" means the use of clean, non-putrescible material such as soil, sand, and some building materials, to change the existing ground level of an area of land;

"staging plan and management plan" means a staging plan and a related management plan adopted by the council;

"standard flood" means the probable maximum flood;

"1% AEP flood" is a 1% probability flood within the meaning of Appendix C to the Floodplain Development Manual published by the Public Works Department and available to the public at the office of the council;

"the Act" means the Environmental Planning and Assessment Act 1979;

"the map" means the map marked "Penrith Local Environmental Plan 1993 (Erskine Park Employment Area)" as amended by the maps (or, if any sheets of maps are specified, by the specified sheets of the maps) marked as follows:

"transport terminal" means a building or place used as an airline terminal, a road transport terminal, a bus station or a bus depot;

"utility installation" means a building or work used for a utility undertaking;

"utility undertaking" means any undertaking carried on by or by authority of any Government department, or in pursuance of any Commonwealth or State Act, for the purposes of:

(a) railway, road, water or air transport, or wharf or river undertakings; or

(b) the provision of sewerage, sewage treatment or drainage services; or

(c) the supply of water, hydraulic power, electricity or gas; or

(d) telecommunications facilities; or

(e) water quality control facilities;

"vehicle body repair workshop" means a building or place used for the repair of vehicles or agricultural machinery, involving body building, panel beating or spray painting;

"vehicle repair station" means a building or place (other than a vehicle body repair workshop) used for the purpose of carrying out repairs or the selling and fitting of accessories to vehicles or agricultural machinery;

"warehouse or distribution centre" means a building or place used for the principal purpose of storing, handling or displaying items (whether goods or materials) which have been produced or manufactured for sale, other than retail sale to the public from the warehouse or distribution centre;

"waste disposal" means the discharge, emission or deposit into the environment, of any matter, whether liquid, solid, gaseous or radioactive, in such volume, consistency or manner as to cause an alteration to the environment, but does not include waste water disposal carried out by the Water Board.

SCHEDULE 2 - PROHIBITED INDUSTRIES

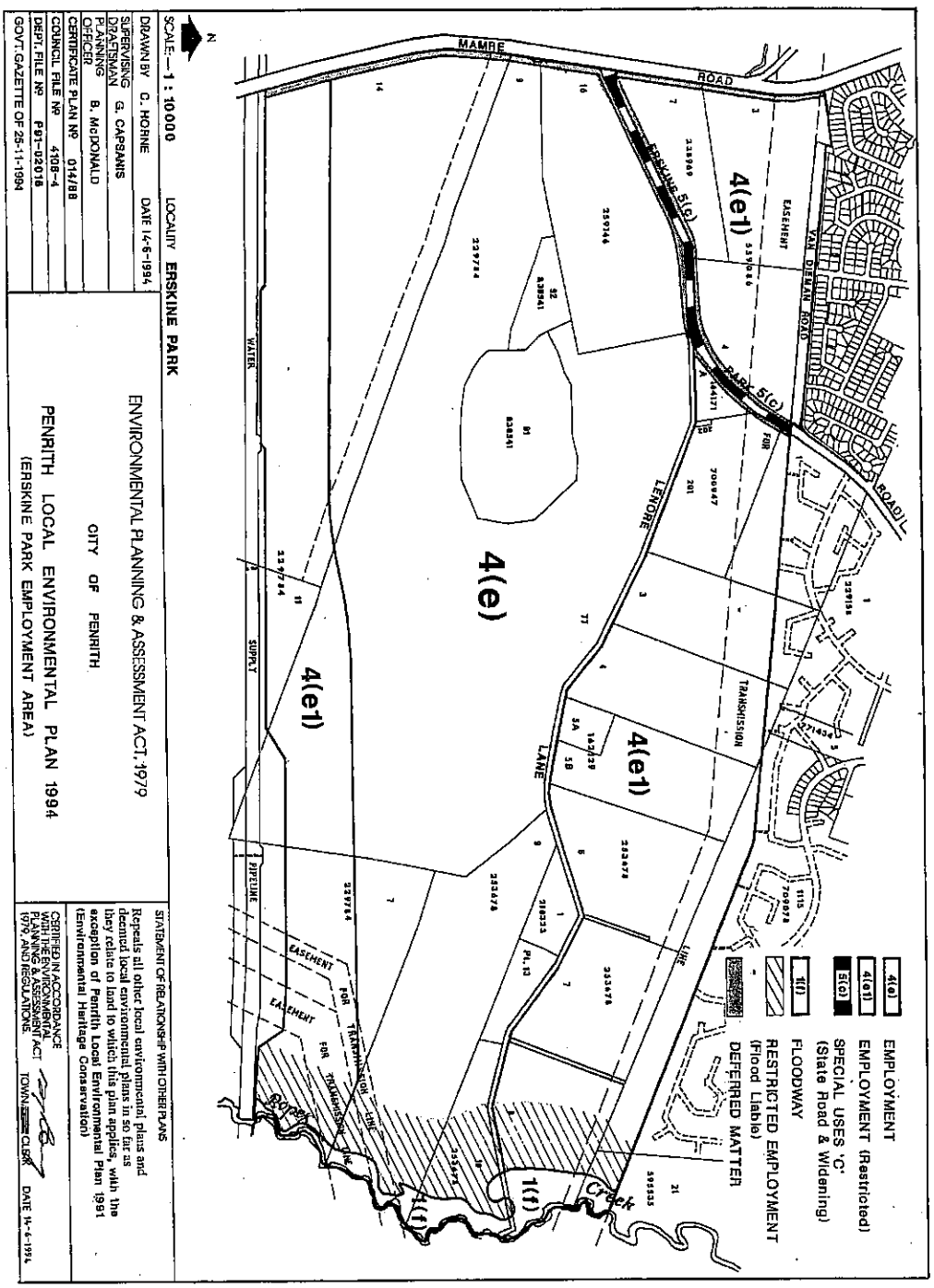
(Cl.9)

- abattoirs;
- chemical factories or works;
- crushing, grinding or milling works;
- extractive industries;
- gasholders;
- liquid, chemical, oil or petroleum waste works;
- liquid fuel depots;
- metallurgical works in which more than 100 tonnes per annum of ferrous or non-ferrous metals or their ores are processed;
- mines;
- oil refineries;
- paper or pulp works;
- petroleum product storage and processing works;
- pre-mix bitumen works;
- rubber or plastic works;
- sawmills;
- scrap recovery or drum reconditioning works.

NOTE

TABLE OF PROVISIONS

PART 4 - SPECIAL PROVISIONS APPLYING TO SPECIFIC LAND


4(e)
EMPLOYMENT
4(e1)
EMPLOYMENT (Restricted)
5(c)
SPECIAL USES 'C' (State Road & Widening)
1(f)
FLOODWAY
RESTRICTED EMPLOYMENT (Flood Liable)
DEFERRED MATTER
MAMRE ROAD
ERSKINE S(c)
VAN DIEMAN ROAD
ROAD
LENORE LANE
TRANSMISSION LINE
WATER SUPPLY
PIPELINE
EASEMENT FOR TRANSMISSION LINE
Creek
4(e1)
4(e)
1(f)
SCALE—1 : 10000
LOCALITY ERSKINE PARK
DRAWN BY C. HORNE
DATE 14-6-1994
SUPERVISING DRAFTSMAN G. CARSANIS
PLANNING OFFICER B. McDONALD
CERTIFICATE PLAN Nº 014/88
COUNCIL FILE Nº 4108-4
DEPT. FILE Nº P91-02018
GOVT. GAZETTE OF 25-11-1994
ENVIRONMENTAL PLANNING & ASSESSMENT ACT, 1979
CITY OF PENRITH
PENRITH LOCAL ENVIRONMENTAL PLAN 1994
(ERSKINE PARK EMPLOYMENT AREA)
STATEMENT OF RELATIONSHIP WITH OTHER PLANS
Repeals all other local environmental plans and deemed local environmental plans in so far as they relate to land to which this plan applies, with the exception of Penrith Local Environmental Plan 1991 (Environmental Heritage Conservation)
CERTIFIED IN ACCORDANCE WITH THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979, AND REGULATIONS
TOWN CLERK
DATE 14-6-1994

Appendix D
Department of Energy and Utilities Certificate

Stephen McCormack

From: Angela Maroya [amaroya@consultingearth.com.au]
Sent: Thursday, 28 February 2008 10:59 AM
To: Stephen McCormack
Subject: FW: CP Records Search

From: Karin Carter [mailto:karin.carter@dwe.nsw.gov.au]
Sent: Thursday, February 28, 2008 10:57 AM
To: amaroya@consultingearth.com.au
Subject: FW:CP Records Search

Sally

The Department's records do not show any type of cathode protection systems installed at the address below.

However be aware that sacraficial anodes cathode protection systems do not need to be registered.

Regards
Karin Carter
Customer Programs
Department of Water and Energy
Tel: 61 2 8281 7706
Fax: 61 2 8281 7750
GPO Box 3889 Sydney NSW 2001

From: Angela Maroya [mailto:amaroya@consultingearth.com.au]
Sent: Monday, 25 February 2008 2:42 PM
To: Paul Maddocks
Subject: Records Search

Dear Paul,

Can you please undertake a search of whether any cathode protection systems have been installed at the following address:

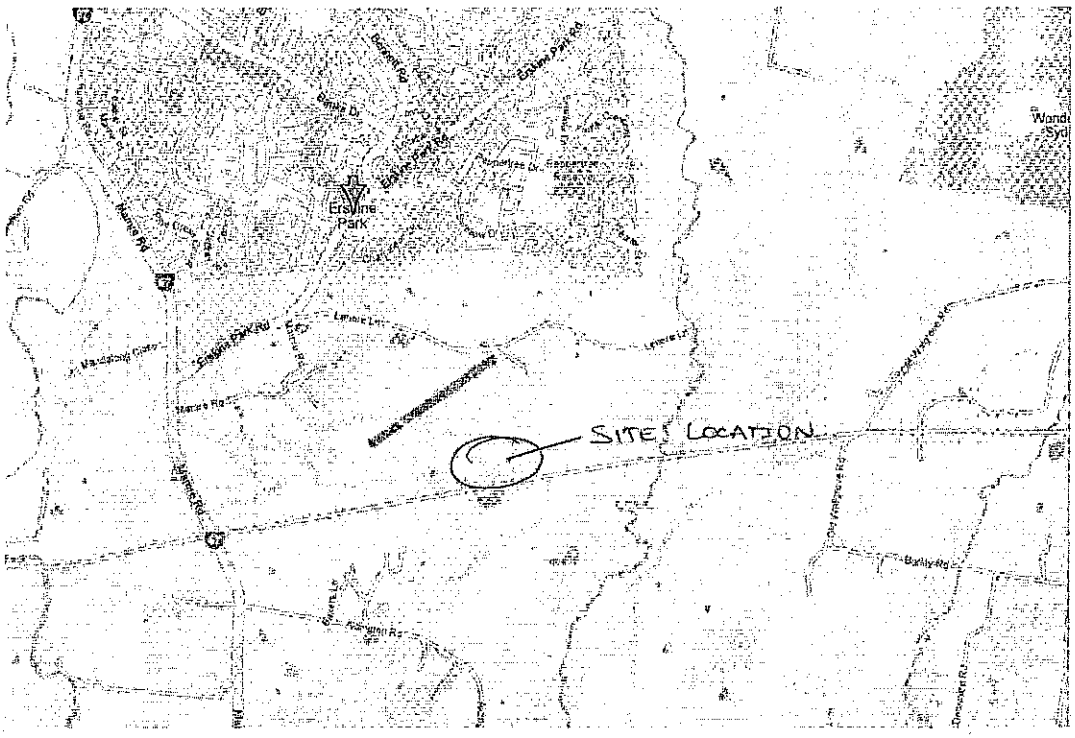
Templar Road, Erskine Park.

Google Map (find attached)

If you have any questions or require further information please contact Kelly Weir on 02) 8569 2200

Regards,
Sally Anderson
Office Manager

Consulting Earth Scientists Pty Ltd
www.consultingearth.com.au
Jones Bay Wharf 19-21
Lower Deck Suite 121
26-32 Pirrama Road
Pyrmont, NSW, 2009
Tel: +61 2 8569 2200 Fax: -61 2 9552 4399


Ersvine Park
SITE LOCATION

Appendix E
Department of Defence Certificate

Box: 381H

Department of Lands

1 Prince Albert Rd
Sydney NSW 2000
Ph 1300 0LANDS
Fax (02) 9233 4357
lands.nsw.gov.au

R HAZLETT & COMPANY
DX 1078 Sydney

UNEXPLODED ORDNANCE SEARCH RESULT

Date: 6/2/2008
Appln No: 914532
Title Ref: 11/229784
Your Ref: HAZ-LOU-EMG68029
Parish: MELVILLE CUMBERLAND

The Department of Defence advises that there is no record of land within this title having been used for military purposes of a nature that may have resulted in ordnance-related contamination.

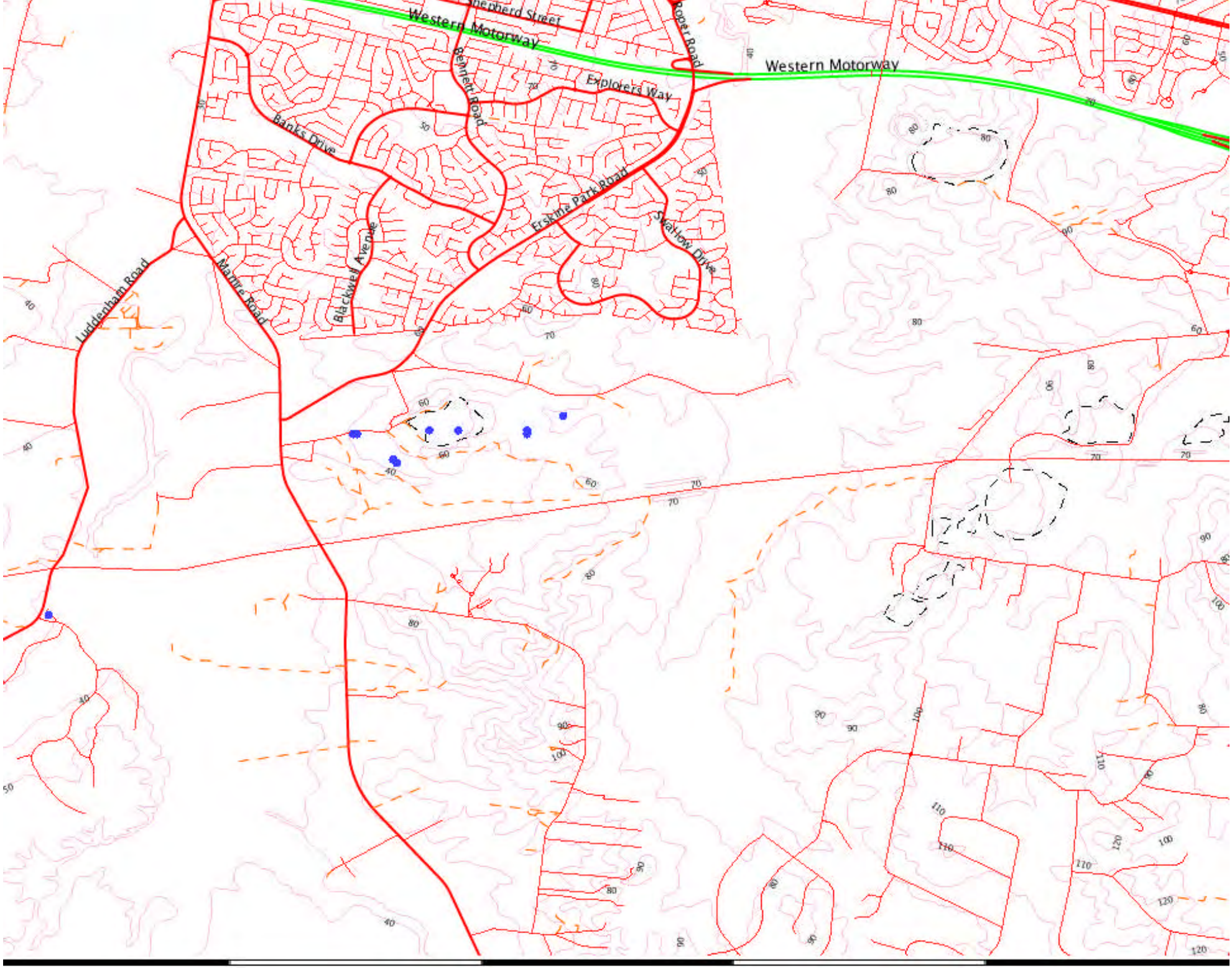
For any further details regarding your inquiry, please contact Ms Josephine Velte at the Department of Lands on Phone (02) 9228 6835 or Fax (02) 9221 1323.

* On receipt, please check that the property details above are correct.

MR RON SALE
Manager
Electronic Services LPI

NEW SOUTH WALES GOVERNMENT

Appendix F
Regional Groundwater Bore Data Reports


Western Motorway
Western Motorway
Explorers Way
Bennett Road
Banks Drive
Roper Road
Erskine Park Road
Swallow Drive
Blackwell Avenue
Mamre Road
Luddenham Road
8 km

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101082

Works Details (top)

GROUNDWATER NUMBER	GW101082
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-27
FINAL-DEPTH (metres)	40.30
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	12.43
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255918.00
EASTING	296155.00
LATITUDE	33 49' 2"
LONGITUDE	150 47' 51"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	40.30	158			Other
1	1	Casing	P.V.C.	-1.02	40.30	50			C: 0-28m
1	1	Opening	Screen	30.40	39.30	.4			(Unknown); PVC Class 18
1		Annulus	(Unknown)	0.00	0.00				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101083

Works Details (top)

GROUNDWATER NUMBER	GW101083
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-28
FINAL-DEPTH (metres)	78.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- YOUNG GRANITE
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	9.12
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255523.00
EASTING	294954.00
LATITUDE	33 49' 14"
LONGITUDE	150 47' 4"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	78.00	158			Other
1	1	Casing	P.V.C.	-0.76	78.00	50			C: 0-58m
1	1	Opening	Screen	58.20	76.00	.4			(Unknown); PVC Class 18
1		Annulus	(Unknown)	58.00	78.00				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101084

Works Details (top)

GROUNDWATER NUMBER	GW101084
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-28
FINAL-DEPTH (metres)	50.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255492.00
EASTING	294981.00
LATITUDE	33 49' 15"
LONGITUDE	150 47' 5"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	50.00	158			Other
1	1	Casing	PVC Class 18	-0.78	50.00	50			
1	1	Opening	Screen	30.20	48.00	.4			(Unknown); PVC Class 18
1		Annulus	(Unknown)	27.00	50.00				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101085

Works Details (top)

GROUNDWATER NUMBER	GW101085
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-30
FINAL-DEPTH (metres)	99.30
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255790.00
EASTING	295900.00
LATITUDE	33 49' 6"
LONGITUDE	150 47' 41"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	99.30	158			Other
1	1	Casing	P.V.C.	-0.77	99.30	50			
1	1	Opening	Screen	79.50	97.30	.4			(Unknown); PVC
1		Annulus	(Unknown)	77.00	97.30				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101086

Works Details (top)

GROUNDWATER NUMBER	GW101086
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-29
FINAL-DEPTH (metres)	69.70
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255759.00
EASTING	295901.00
LATITUDE	33 49' 7"
LONGITUDE	150 47' 41"
GS-MAP	

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101087

Works Details (top)

GROUNDWATER NUMBER	GW101087
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-31
FINAL-DEPTH (metres)	90.30
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- YOUNG GRANITE
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255732.00
EASTING	294667.00
LATITUDE	33 49' 7"
LONGITUDE	150 46' 53"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	90.30	158			Other
1	1	Casing	P.V.C.	-0.70	90.30	50			
1	1	Opening	Screen	70.50	88.30	50			(Unknown); PVC; A: .4mm
1		Annulus	(Unknown)	0.00	0.00				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	69.70	158			Other
1	1	Casing	P.V.C.	-0.79	69.70	50			
1	1	Opening	Screen	49.90	67.70	50			(Unknown); PVC; A: .4mm
1		Annulus	(Unknown)	47.00	67.70				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW101088

Works Details (top)

GROUNDWATER NUMBER	GW101088
LIC-NUM	10BL157654
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	TEST BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Percussion
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-05-30
FINAL-DEPTH (metres)	60.20
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- YOUNG GRANITE
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255733.00
EASTING	294693.00
LATITUDE	33 49' 7"
LONGITUDE	150 46' 54"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	93 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	60.20	158			Other
1	1	Casing	P.V.C.	-0.76	60.20	50			
1	1	Opening	Screen	40.40	58.20	50			(Unknown); PVC; A: .4mm
1		Annulus	(Unknown)	0.00	0.00				(Unknown); GS: 2mm

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102673

Works Details (top)

GROUNDWATER NUMBER	GW102673
LIC-NUM	10BL152917
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Rotary
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1993-08-20
FINAL-DEPTH (metres)	78.00
DRILLED-DEPTH (metres)	48.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	4750.00
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255775.00
EASTING	295206.00
LATITUDE	33 49' 6"
LONGITUDE	150 47' 14"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	GIS - Geographic Information System
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	77 & 85

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	91 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	24.80	100			(Unknown)
1		Hole	Hole	24.80	32.50	96			Cable Tool
1		Hole	Hole	32.50	78.00	100			(Unknown)
1	1	Casing	P.V.C.	0.00	20.45	50			C: 41.1-47m; Screwed; Seated on Bottom
1	1	Casing	(Unknown)	23.40	29.30				C: 49.95-55.9m
1	1	Casing	(Unknown)	32.30	38.20				C: 58.8-64.7m
1	1	Casing	(Unknown)	32.30	38.20				C: 76.5-78m
1	1	Casing	(Unknown)	32.30	38.20				C: 67.7-73.55m
1	1	Opening	Screen	20.50	23.40	50			PVC; A: .4mm; Screwed
1	1	Opening	Screen	29.30	32.30				Screwed
1	1	Opening	Screen	38.20	41.10				Screwed
1	1	Opening	Screen	47.00	50.00				Screwed
1	1	Opening	Screen	55.90	58.80				Screwed
1	1	Opening	Screen	64.70	67.65				Screwed
1	1	Opening	Screen	73.60	76.50				
1		Annulus	(Unknown)	13.00	78.00				Graded

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
30.00	78.00	48.00		9.68					

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	3.00	3.00	FILL		
3.00	4.00	1.00	CLAY BROWN		
4.00	9.00	5.00	SILTSTONE/BROWN/CREAM		
9.00	10.00	1.00	SHALE/ GREY		
10.00	15.00	5.00	SILTSTONE/ GREY/FINE		
15.00	18.00	3.00	SHALE/GREY		
18.00	21.00	3.00	SANDSTONE/GREY		
21.00	25.30	4.30	SILTSTONE/SANDSTONE/GREY		
25.30	26.00	0.70	SILTSTONE		
26.00	27.30	1.30	SHALE		
27.30	30.30	3.00	SILTSTONE/SHALE/GREY		
30.30	31.80	1.50	SILTSTONE/SANDSTONE/SHALE		
31.80	40.00	8.20	SHALE		
40.00	48.00	8.00	SILTSTONE/SANDSTONE/SHALE		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, February 22, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102674

Works Details (top)

GROUNDWATER NUMBER	GW102674
LIC-NUM	10BL152917
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Rotary
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1993-08-25
FINAL-DEPTH (metres)	69.70
DRILLED-DEPTH (metres)	71.90
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- BOTANY BAY SAND BEDS
GW-ZONE	- NAMOI VALLEY (GINS LEAP TO NARRABRI) GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	4400.00
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6255779.00
EASTING	295412.00
LATITUDE	33 49' 6"
LONGITUDE	150 47' 22"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	GIS - Geographic Information System
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	MELVILLE
PORTION-LOT-DP	91 838541

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	36.00	100			(Unknown)
1		Hole	Hole	36.00	39.00	96			Cable Tool
1		Hole	Hole	39.00	71.90	100			(Unknown)
1	1	Casing	P.V.C.	0.00	21.00	50			C: 0-15m
1	1	Casing	(Unknown)	24.00	29.90				
1	1	Casing	(Unknown)	41.70	47.60				
1	1	Casing	(Unknown)	50.50	56.40				
1	1	Casing	(Unknown)	59.40	65.30				
1	1	Casing	(Unknown)	68.20	69.70				
1	1	Opening	Screen	21.00	23.90	50			PVC; A: .4mm; Screwed
1	1	Opening	Screen	29.90	32.80				A: .4mm; Screwed
1	1	Opening	Screen	38.70	41.70				A: .4mm; Screwed
1	1	Opening	Screen	47.60	50.50				A: .4mm; Screwed
1	1	Opening	Screen	56.40	59.40				A: .4mm; Screwed
1	1	Opening	Screen	65.30	68.20				A: .4mm; Screwed
1		Annulus	(Unknown)	15.00	69.70				Graded

Water Bearing Zones (top)

no details

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.00	2.00	SHALE/GREY/BROWN		
2.00	9.00	7.00	SILTSTONE/SHALE		
9.00	12.00	3.00	SHALE/SILTSTONE		
12.00	25.00	13.00	SILTSTONE/SANDSTONE/SHALE		
25.00	32.00	7.00	SANDSTONE/SILTSTONE/SHALE		
32.00	37.40	5.40	SILTSTONE,SHALE		
37.40	40.00	2.60	SHALE,CARBONACEOUS		
40.00	48.00	8.00	SILTSTONE/SHALE		
48.00	53.00	5.00	SHALE/SILTSTONE/SANDSTONE		
53.00	56.00	3.00	SHALE		
56.00	60.00	4.00	SANDSTONE/SILTSTONE		
60.00	71.90	11.90	SHALE/SILTSTOINE		

Appendix G
Borehole Logs

Project ID: CES080106-WPG **Easting:** 295989

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255244

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH1**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-01/02-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-03-SM	Hand Auger		
				End of borehole.				
1								

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

Project ID: CES080106-WPG **Easting:** 295960

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255153

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH2**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-04-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-05-SM	Hand Auger		
1				**End of borehole.**				

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

Project ID: CES080106-WPG **Easting:** 296050

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255184

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH3**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-06-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-07-SM	Hand Auger		
1				**End of borehole.**				

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

Project ID: CES080106-WPG **Easting:** 296119

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255225

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH4**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-08-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-09-SM	Hand Auger		
				End of borehole.				
1								

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

Project ID: CES080106-WPG **Easting:** 296170

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255176

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH5**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-10-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-11-SM	Hand Auger		
				End of borehole.				
1								

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

Project ID: CES080106-WPG **Easting:** 296249

Project: Erskine Park, Templar Road Lot 11 **Northing:** 6255218

Client: JacFin Pty Ltd **Elevation:**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Lot 11 Templar Road, Erskine Park **Environmental Log:** **BH6**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Hand Auger			TOPSOIL: Clayey Silt: dark brown, low plasticity, moist (MC>PL) with roots throughout	140208-12-SM	Hand Auger		
				SILTY CLAY: reddish brown, moist, medium to high plasticity, with trace of fine to coarse sand and rare ironstone gravel	140208-13-SM	Hand Auger		
				End of borehole.				
1								

Drill Company: CES (Drilling) **Date Commenced:** 14/02/2008

Drill Model: Hand Auger **Date Completed:** 14/02/2008

Hole Diameter (mm): 80 **Logged/checked by:** SM

SUMMARY OF SOIL LOGGING PROCEDURES (Page 1 of 2)

Based on AS1726-1993 *Geotechnical Site Investigations*

CONSULTING EARTH SCIENTISTS

DESCRIPTION ORDER: SOIL NAME: plasticity or particle characteristics (size and shape), colour, moisture condition, consistency, description of minor components, structure, additional constituents

Examples: Clayey SAND: fine to medium grained, grey, moist, loose, low plasticity clay with a trace of fine gravel (Alluvial)

CLAY: high plasticity, brown mottled grey, moist (MC>PL), firm to stiff with some fine grained sand (Residual).

SOIL NAME:

The first step in describing the soil name is based on particle size distribution and plasticity. Soil with >50% of fine material is a clay or silt *(ie.* fine grained soil) and if <50% of fines then the soil is a sand or gravel (*ie* . Coarse grained soil).

Major Divisions					USCS Symbol	Field Identification of Fine Grained Soils			Typical Names
>200mm		BOULDERS							
63 to 200mm		COBBLES							
COARSE GRAINED SOILS	More than 50% by dry mass less than 60mm is greater than 0.06mm	GRAVELS	More than 50% of coarse fraction > 2.0mm	Gravel with < 5% fines	GW	Wide range in grain size and substantial amounts of all intermediate sizes. Not enough fines to bind the coarse grains. No dry strength			GRAVEL (Well graded) and gravel-sand mixtures
					GP	Predominately one size or range of sizes with some intermediate sizes missing. Not enough fines to bind the coarse grains. No dry strength			GRAVEL (Poorly graded) and gravel-sand mixtures
		Gravelly Soils		Gravel with >12% fines	GM	'Dirty' gravel with non-plastic fines (for identification of fines see below). 'Dirty' relates to soil which when handled wet leaves dirt on your hand.			Silty GRAVEL, gravel-silt-sand mixtures
					GC	'Dirty' gravel with plastic fines (for identification of fines see below). 'Dirty' relates to soil which when handled wet leaves dirt on your hand.			Clayey GRAVEL, gravel-sand-clay mixtures
		SANDS	More than 50% of coarse fraction < 2.0mm	Sand with < 5% fines	SW	Wide range in grain size and substantial amounts of all intermediate sizes. Not enough fines to bind the coarse grains. No dry strength			SAND (Well graded) and gravelly SAND
					SP	Predominately one size or range of sizes with some intermediate sizes missing. Not enough fines to bind the coarse grains. No dry strength			SAND (Poorly graded) and gravelly SAND
		Sandy Soils		Sand with >12% fines	SM	'Dirty' sands with non-plastic fines (for identification of fines see below). 'Dirty' relates to soil which when handled wet leaves dirt on your hand.			Silty SAND, sand-silt mixtures
					SC	'Dirty' sands with plastic fines (for identification of fines see below). 'Dirty' relates to soil which when handled wet leaves dirt on your hand.			Clayey SAND, clay-sand mixtures
FINE GRAINED SOILS	More than 50% by dry mass less than 60mm is less than 0.06mm	SILTS & CLAYS	Low Plasticity	Liquid Limit less than 50%	ML	Dry Strength	Dilatancy	Toughness	Inorganic SILT
						None to Low	Quick to Slow	None	
					CL	Medium to High	None to Very Slow	Medium	Inorganic CLAY of low to medium plasticity including gravelly CLAY, sandy CLAY, silty CLAY
					OL	Low to Medium	Slow to None	Low	Organic SILT#
			High plasticity	Liquid Limit greater than 50%	MH	Low to Medium	Slow to None	Low to Medium	Inorganic SILT
					CH	High to Very High	None	High	Inorganic CLAY of high plasticity
					OH	High to Very High	None to Very Slow	Low to Medium	ORGANIC CLAY of medium to high plasticity #
HIGHLY ORGANIC SOILS					Pt	Identified by colour, odour, spongy feel and generally by fibrous texture			Peat and other highly organic soil#

Note #: Effervesces with Hydrogen Peroxide (H_2O_2). If so, and the soil is located on low lying land, then soil may also be actual or potential Acid Sulfate Soil (ASS)

Field Identification tests for Fine Grained Soils - Silt or Clay?

Dry Strength - Allow the soil to dry completely and then test its strength by breaking and crumbling between the fingers.
Toughness Test - The soil is rolled by hand into a thread about 3mm in diameter. The thread is then folded and re-rolled repeatedly until it has dried sufficiently to break into lumps. In this condition inorganic clays are fairly stiff and tough while inorganic silts produce a weak and often soft thread which may be difficult to form and readily breaks and crumbles.
Dilatancy Test - Add sufficient water to the soil, held in the palm of the hand, to make it soft but not sticky. Shake horizontally, striking vigorously against the other hand several times. Dilatancy is indicated by the appearance of a shiny film on the surface of the soil. If the soil is then squeezed or pressed with the fingers, the surface becomes dull as the soil stiffens and eventually crumbles. These reactions are pronounced only for predominantly silt size material.

As most natural soils are part of a combination of various contituents, the primary soil is described and modified by minor components depending on the various proportions.

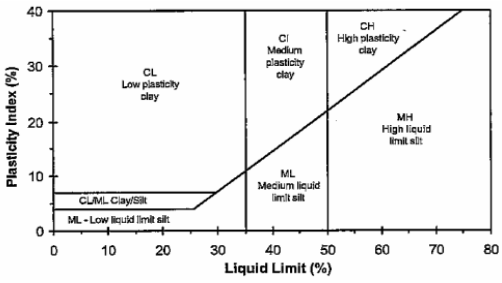
When soil is predominately Coarse grained:			
Fraction	**% of soil mass**	**Term**	**Example**
Major	> 50%	(UPPER CASE)	GRAVEL
Subordinate	12% to 50%	(….)y	Sandy
Minor	5% to 12%	Describe as 'with (…)'	with clay
	< 5%	Omit or use 'with a trace of (….)'	with trace of clay

When soil is predominately Fine grained			
Fraction	**% of soil mass**	**Term**	**Example**
Major	> 50%	(UPPER CASE)	GRAVEL
Subordinate	30% to 50%	(….)y	Sandy
Minor	15% to 30%	Describe as 'with (…)'	with clay
	< 15%	Omit or use 'with a trace of (….)'	with trace of clay

PLASTICITY - for Clays & Silts

Low Plasticity	Liquid Limit (LL) ≤35 %. A 3mm dia thread can barely be rolled at any water content.
Medium Plasticity	LL >35 % ≤ 50 %. The thread is easy to roll and not much time is required to reach PL. Cannot be re-rolled after reaching PL.
High Plasticity	LL > 50 %. It takes considerable time rolling and kneading to reach the PL. The thread can be rerolled several times after reaching the PL.

* Liquid Limit (LL) is defined as the moisture content (%) at which the soil begins to flow.



PARTICLE CHARACTERISTICS - Sands and Gravels

Particle characteristics of coarse grained soils refers to Particle Size, Particle Shape and if possible, composition using rock or mineral name

Grain Sizes			
Gravel		Sand	
Coarse -	20 to 60mm	Coarse -	0.6 to 2 mm
Medium -	6 to 20mm	Medium -	0.2 - 0.6 mm
Fine -	2 to 6 mm	Fine -	0.06 to 0.2 mm

Particle Shapes	
Type	Terms
Predominately Equidimensional:	Rounded, Angular, Sub-rounded or Sub-Angular
Predominately Two Dimensional:	Flaky or Platy
Predominately one dimesional:	Elongated

SUMMARY OF SOIL LOGGING PROCEDURES (Page 2 of 2)

Based on AS1726-1993 *Geotechnical Site Investigations*

CONSULTING EARTH SCIENTISTS

COLOUR:

The colour should be described in the 'moist' condition using simple terms (eg. Black, white, grey, brown). These can be modified as necessary by 'pale', 'dark' or 'mottled'. Borderline colours may be described using a combination of colours (eg. Red-brown).

Where a soil consists of a primary colour with a secondary mottling it should be described as (primary colour) mottled (secondary colour). Where a soil consists of two colours which are present in roughly equal proportions, the colour should be described as (mottled (first colour) and (second colour)

MOISTURE CONDITION:

The moisture condition of a soil should be described in the following terms:

Term	Symbol	Field guide	
		Coarse Grained Soils	Fine Grained Soil
Dry	D	Cohesionless and free running	Hard and fiable or powdery. MC<<Plastic Limit (PL)
Moist	M	Soil feels cool and is darkened in colour. tend to adhere	Soil can be moulded MC ~ PL
Wet	W	free water visible on soil surface.	MC >> PL. Free water forms on hands during handling

Note: The plastic Limit (PL) is defined as the moisture content at which the soil crumbles when rolled into threads of 3mm dia.

CONSISTENCY:

There are two distinct methods of describing the consistency of a soil and depends on whether the soil is essentially cohesive (clay and silt) or non-cohesive (sand and gravel)

Cohesive Soils

Description (Consistency)	Symbol	Undrained Shear Strength (c_u) [1]	Unconfined Compressive Strength (q_u) [2]	SPT 'N' (Blows / 300mm)[3]	DCP (Blows / 100mm)[4]	Field Guide
		Shear Vane (kPa)	Pocket Penetrometer (kPa)			
Very Soft	VS	<12	<25	<2	<1	Exudes between the fingers when squeezed in hand
Soft	S	12 - 25	25 - 50	2 - 4		Can be moulded by light finger pressure
Firm	F	25 - 50	50 - 100	4 - 8	1 - 2	Can be moulded by strong finger pressure
Stiff	St	50 - 100	100 - 200	8 - 15	3 - 4	Cannot be moulded by fingers. Can be indented by thumb
Very Stiff	VSt	100 - 200	200 - 400	15 -30	5 - 10	Can be indented by thumbnail
Hard	H	>200	>400	>30	>10	Can be indented with difficulty by thumbnail

Non-Cohesive Soils

The consistency of essentially non-cohesive soils is described in terms of relative density

Description	Symbol	Density Index %	SPT 'N' (Blows/300mm)[3]	DCP (Blows/100mm)[4]	Field Guide
Very Loose	VL	<15	0 - 4	<1.2	Easily penetrated with a 13mm reinforcing rod pushed by hand
Loose	L	15 - 35	4 - 10	1 - 2	Can be excavated with a spade. 50mm wooden peg can be easily driven. Easily penetrated with a 13mm reinforcing rod pushed by hand
Medium Dense	MD	35 - 65	10 - 30	2 - 3	Hard shoveling. Penetrated 300mm with 13mm reinforcing rod driven with a 2kg hammer.
Dense	D	65 - 85	30 - 50	4 - 8	Penetrated 300mm with 13mm reinforcing rod driven with 2kg hammer, requires pick for excavation. 50mm wooden peg is hard to drive.
Very Dense	VD	>85	>50	>8	Penetrated only 25 - 50 mm with 13mm reinforcing rod driven with 2kg hammer.

Assessment of the density index normally requires a penetration test (SPT, DCP or CPT) in conjunction with published correlation tables. Alternatively, *in-situ* density tests can be conducted in association with minimum and maximum density tests performed in the laboratory.

Note 1: USS (C_u) can be assessed using a shear vane in very soft to firm soils. Not usually suitable for stiff to very stiff clay and sandy clays
Note 2: UCS (q_u) can be estimated using a pocket penetrometer in firm to very stiff soils although it may overestimate UCS by a factor of 1.5 - 2.0
Note 3: SPT correlations are provided in Standards Australia Handbook (HB160-2006) *Soil Testing* and may require corrections for rod length, bore diameter, groundwater, overburden pressure and type of equipment.
Note 4: DCP correlation as provided in Standards Australia Handbook (HB160-2006) *Soil Testing.* To be used as a guide only and are depth and moisture dependent

STRUCTURE:

Structure includes the zoning and cementing aspects of the soil.

Zoning		Cementing (of coarse grained soils)	
Layers -	continuous across exposure or sample	Weakly -	Easily broken up by hand in air or water
Lens -	continuous across exposure or sample	Moderately -	Effort required to break up the soil by hand in air or water
Pocket -	irregular inclusion of different material	Strongly -	Cannot be broken up by hand in air or water

ADDITIONAL OBSERVATIONS:

This includes other pertinent aspects of the soil or soil sample, including where possible:

- Geological Origin
  - Fill - artificial soils / deposits
  - Alluvial - soils deposited by the action of water
  - Aeolian - soils deposited by the action of wind
  - Topsoil - soils supporting plant life containing significant organic content.
  - Residual - soils derived from insitu weathering of parent rock.
  - Colluvial - transported debris usually unsorted, loose and deposited by gravity towards the base of terrain of high relief
- Odour (eg, hydrocarbon)
- Discolouration which may indicate contamination of the soil
- Waste inclusions

Borelog Notes and Symbols

Jones Bay Wharf 19 - 21 • Lower Deck Suite 121 • 26 - 32 Pirrama Road • Pyrmont, NSW 2009 • Australia
www.consultingearth.com.au • Telephone: 02 8569 2200 • Fax: 02 9552 4399

DRILLING INFORMATION:

Support

None	No support provided
Mud	Drilling mud used
NQ	NQ size drilling pipe (69.9 mm ODia)
HQ	HQ size drilling pipe (88.9 mm ODia)
PVC	PVC Casing

Method

SFA	Solid Flight Auger	DP	Direct Push Tube	Core	Diamong Coring
HFA	Hollow Flight Auger	WB	Wash Boring (water)	RAH	Rotary Air Hammer
V-bit	Steel 'V' auger bit	MWB	Mud Wash Boring	JET	Jetting
TC-bit	Tungsten Carbide auger bit	RR	Rock-roller / Tricone	EX	Excavation
HA	Hand Auger	Stratapak	Stratapack / PCD	CT	Cable Tool (percussion)

Water

- Inflow of water
- Water Loss
- Water Level during drilling / excavation
- Stabilised Water Level

SAMPLING:

ddmmyy - 01 - SM Date - Sample Number - Initials of Sampler **(Sample Depth is indicated by horizontal lines which define the start and end depths)**

DS	Disturbed Sample - Small	U50	Undisturbed 50mm dia. Tube Sample	PT	Core sample from Push tube
DB	Disturbed Sample - Large	ES	Environmental Sample (laboratory supplied glass jar)		

FIELD TESTS:

Standard Penetration Test (SPT)

2,2,5	Number of blows per 150mm over a depth of 450mm
N = 7	SPT "N" number = sum of last two blow counts
30/XX mm	30 blows for first 'XX' mm penetration
RW	Rod weight only caused full penetration
RH	Hammer and rod weight only caused full penetration
B	Hammer bouncing
R	Refusal

Vane Shear

VS = 30 Vane Shear Reading of 30 kPa

Pocket Penetromenter

PP = 100 Pocket Penetrometer Reading of 100 kPa

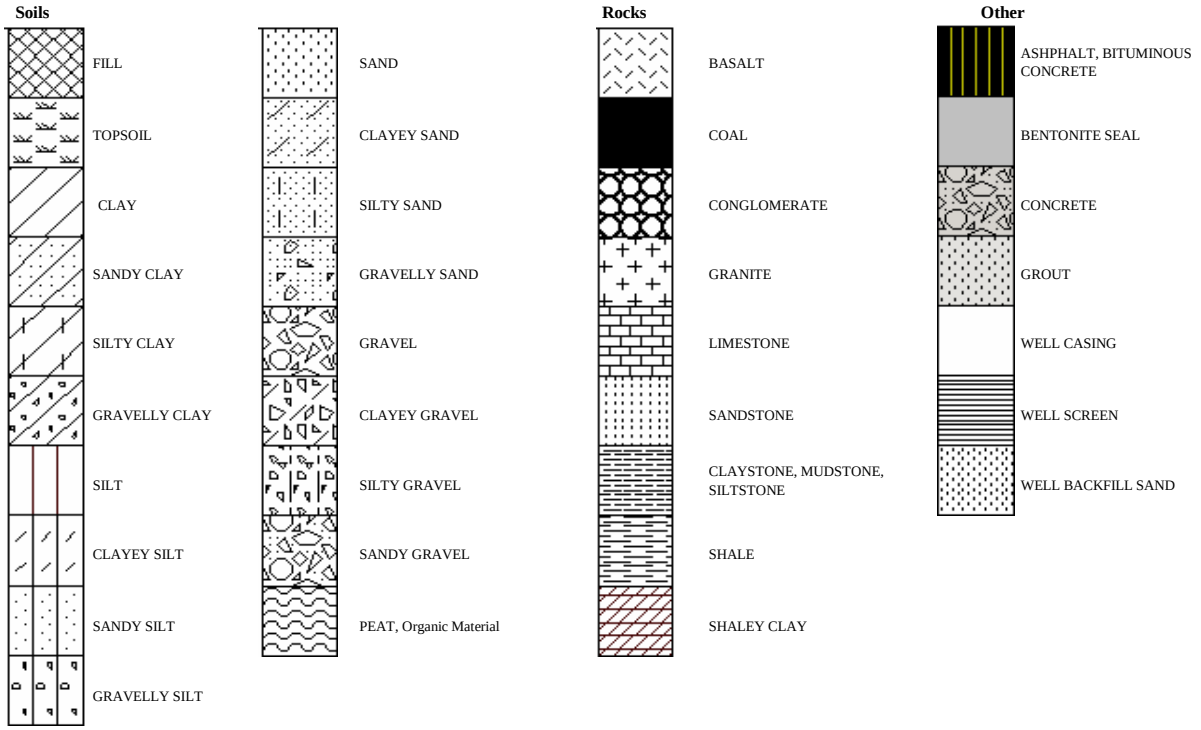
Photoionisation / Flameionisation Detector (PID/FID)

PID = 100	PID Reading of 100 parts per million (ppm) - Soil Headspace Method
IS	Insufficient sample recovery to allow testing

LITHOLOGY BOUNDARIES:

Known —————— Probable ····· Gradual Transition - - - - -

SYMBOLS:



NATURAL ROCK DEFECTS:

Description Order:

Fracture Type, Orientation, Coating or Infilling, Shape, Roaghness,

Fracture Type

JT	Joint
BP	Bedding Plane Parting
SM	Seam
FZ	Fragmented Zone
SZ	Shear Zone
VN	Vein

Shape

PLN	Planar
CU	Curved
UN	Undulose
ST	Stepped
IR	Irregular

Orientation

VT	Vertical
HZ (or 0o)	Horizontal
X o	X' degrees from Horizontal

Roughness

PO	Polished
K	Slickensided
SO	Smooth
RF	Rough
VR	Very rough

Coating

CN	Clean
STN	Stain (No coating or infilling but surfaces discoloured by mineral staining)
VE	Veneer (A visible coating of soil or mineral too thin to measure
CO	Coating (A visible coatingup to 1mm thick)

NOTE: If coating or infilling is thicker then ~1mm then it is described using separate appropriate term eg seam)

Appendix H
Field Data Sheets

CONSULTING EARTH SCIENTISTS

PHOTOIONISATION DETECTOR (PID) DATA SHEET

Client:	Worley Parsons Group	**CES Project Code:**	CES080106-WPG
Project:	stage 1 ESA and Limited Stage 2 ESA	**Location:**	Erskine Park
Sampler (s):	McCormack **Signature(s):**	**Project Manager:**	McCormack
PID manufacturer and model:	MiniRae	**Serial no:**	

Calibration gas type and concentration:	Isobutylene 97.5ppm ± 2.0	**Lamp voltage:**	
Calibration date:	14-Feb-08	**Calibration check and date:**	14 Feb 2008

Date dd/mm/yyyy	Location Details	Depth m	Method (Note 1)	Duration min.	Background ppm	Readings (ppm) Minimum	Readings (ppm) Maximum	Comments
14-Feb-08	140208-01-SM	0-0.15	1	0.5	0	0	0.1	
14-Feb-08	140208-03-SM	0.25-0.5	1				0.2	
14-Feb-08	140208-04-SM	0-0.15	1				0.2	
14-Feb-08	140208-05-SM	0.25-0.5	1				0.1	
14-Feb-08	140208-06-SM	0-0.15	1				0.2	
14-Feb-08	140208-07-SM	0.25-0.5	1				0.1	
14-Feb-08	140208-08-SM	0-0.15	1				0.2	
14-Feb-08	140208-09-SM	0.2-0.5	1				0.1	
14-Feb-08	140208-10-SM	0-0.15	1				0.1	
14-Feb-08	140208-11-SM	0.2-0.5	1				0.1	
14-Feb-08	140208-12-SM	0-0.15	1				0.1	
14-Feb-08	140208-13-SM	0.15-0.4	1				0.1	
	Calibration Check =					98.2ppm.		O-K.

Note 1: HS - Headspace method. SG - Ambient soil gas method.

Appendix I
QAQC Programme and Results

I. QUALITY ASSURANCE AND QUALITY CONTROL PROGRAMME

I.1 FIELD QA/QC PROGRAMME

Field QA/QC for this investigation consisted of one blind replicate sample, one trip blank and one rinsate sample.

The number of samples collected during the soil investigation is summarised in Table I1 and I2.

Table I1: Number and Frequency of Blind Replicate QA/QC Samples

QA/QA Sample	Analytes	Quantity		Frequency	
		Total	QC	Recommended	Actual
SOIL					
Blind Replicates	Metals	12	1	≥ 10 %	8.3 %
	OCP and PCBs	4	1	≥ 10 %	25 %
	TPH, BTEX and PAH	3	1	≥ 10 %	33 %

Table I2: Number and Frequency of QA/QC Samples

QA/QA Sample	Analytes	Quantity	Frequency	
		QA/QC	Recommended	Actual
SOIL				
Trip Blanks	BTEX and metals	1 (sand)	1 Per Batch	1 per batch
Rinsate	TPH, BTEX, metals	1 (water)		1 per batch

A description of each of the field QA/QC samples is provided in the following sections.

I.1.1 Environmental Samples

Environmental samples are the representative samples of soil or groundwater collected for analysis to determine aspects of their chemical composition. Environmental samples are the original sample taken from a particular location and other samples are replicates or triplicates of the original.

I.1.2 Blind Replicate Samples

Blind replicate samples are provided by the collection of two similar samples from the same location or successively from the same monitoring bore. These samples are preserved, stored, transported, prepared and analysed in an identical manner to environmental samples.

I.1.3 Trip Blanks

Trip blanks consisting of pre-washed bottles containing distilled or de-ionised water and appropriate preservatives will be supplied by the analytical laboratory. The role of trip blanks is to detect potential contamination during sample transport. These samples reside in transport vessels during sampling activities and are not opened in the field. Trip blanks are analysed at the laboratory as regular samples or only for volatile organic compounds, as deemed appropriate.

For soil sampling programmes, the trip blank consists of a laboratory-supplied sand blank containing quartz sand that has been heated to 400ºC.

I.1.4 Rinsate (Equipment) Blanks

Rinsate (equipment) blanks consist of pre-preserved bottles filled with laboratory-prepared water that is passed through decontaminated field equipment. Rinsate blanks will be prepared on site, exposed to the atmosphere and rinsed through decontaminated field equipment. These samples assess atmospheric background conditions at the site and the efficiency of decontamination procedures.

Rinsate samples consist of the required complement of sample bottles labelled with a unique CES sample identification number. Rinsate blanks are prepared by pouring blank laboratory-supplied rinsate water through or over the sampling equipment after the final cleaning rinse. Rinsate blanks are transported and analysed at the laboratory as regular samples.

For inorganic compounds and semi-volatile organic compounds (SVOCs), rinsate water must consist of milli-Q water (distilled tap water passed through a resin de-ioniser). This water is unsuitable for the analysis of volatile organic compounds (VOC) due to the inclusion of volatiles in the milli-Q water. Only purged water is to be used for volatiles (VOC) rinsate blanks. This water is produced at the laboratory by purging spring water that has not been adulterated by VOCs as with tap water. Purged water is unsuitable for the production of rinsate samples for inorganics and SVOCs due to the presence of trace levels of inorganic compounds.

I.2 LABORATORY QA/QC PROGRAMME

The reliability of test results from the analytical laboratories will be monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by the NATA registered laboratory specifies sample tracking procedures, methods of extraction,

analysis, Limit of Reporting (LOR)/Estimated Quantitation Limits (EQLs) and acceptance criteria for results. Laboratory QA/QC procedures adopted by the laboratories used in this investigation are summarised below.

I.2.1 Laboratory Duplicate Samples

Laboratory duplicates provide data on analytical precision for each batch of samples. Where required and in order to provide sufficient sample for analysis of laboratory duplicate, two batches of samples are collected at a site listed and marked "laboratory duplicate" on the Chain of Custody form. This is done in order to ensure that sufficient sample is collected.

I.2.2 Standards

Calibration standards are prepared from individual certified materials, AR Grade or better reagents purchased as certified mixtures. Stock solutions are replaced every 6 months. Working standards are prepared at least every month from the stock solutions.

I.2.3 Laboratory Control Samples

Laboratory control samples consist of a clean matrix (de-ionised water or clean sand) spiked with a known concentration of the analyte being measured. These samples monitor method recovery in clean samples and can also be used to evaluate matrix interference by comparison with matrix spikes. Laboratory control samples may be certified reference materials.

I.2.4 Surrogates

For organic analyses, a surrogate is added at the extraction stage in order to verify method effectiveness. The surrogate is then analysed with the batch of samples. Percent recovery is calculated.

I.2.5 Matrix Spike

A matrix spikes consist of samples spiked with a known concentration of the analyte being measured, in order to identify properties of the matrix that may hinder method effectiveness. Samples are spiked with concentrations equivalent to 4 to 10 times the Limit of Reporting/Estimated Quantitation Limit (LOR/EQL). Percent recovery is calculated.

I.2.6 Method Blanks

Method blanks (de-ionised water or clear sand) were carried through all stages of sample preparation and analysis at a rate of approximately 10%. Analyte concentrations in blanks should be less than the stated LOR/EQL. Reagent blanks are run if the method blank exceeds the LOR/EQL. The purpose of method blanks is to detect laboratory contamination.

I. DATA ACCEPTANCE CRITERIA

Data Acceptance Criteria (DAC) for this investigation are summarised in Table 5 in the main body of the report

Blind Replicate RPD Results - SOIL

Sample ID		140208-01-SM	140208-02-SM		
Location		BH1			
Depth (mBGL)		0.0 - 0.2			
Laboratory		ALS	ALS		
Parameter	Units	Original Sample	Blind Replicate	Blind Replicate	
				Average	RPD
Metals					
Arsenic	mg kg-1	6	7	6.5	15%
Cadmium	mg kg-1	<1	<1	N/A	N/A
Chromium	mg kg-1	20	22	21	10%
Copper	mg kg-1	10	10	10	0%
Lead	mg kg-1	18	18	18	0%
Nickel	mg kg-1	7	6	6.5	15%
Zinc	mg kg-1	21	18	19.5	15%
Mercury	mg kg-1	<0.1	<0.1	N/A	N/A
Total Petroleum Hydrocarbons					
TPH C_6-C_9	mg kg^{-1}	<10	<10	N/A	N/A
TPH C_{10}-C_{14}	mg kg^{-1}	< 50	< 50	N/A	N/A
TPH C_{15}-C_{28}	mg kg^{-1}	<100	<100	N/A	N/A
TPH C_{29}-C_{36}	mg kg^{-1}	<100	<100	N/A	N/A
Benzene, Toluene, Ethylbenzene and Total Xylenes					
Benzene	mg kg^{-1}	< 0.2	< 0.2	N/A	N/A
Toluene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Ethylbenzene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
m&p-Xylene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
o-Xylene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Polycyclic Aromatic Hydrocarbons					
Naphthalene	mg kg^{-1}	<0.5	< 0.5	N/A	N/A
Acenaphthylene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Acenaphthene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Flourene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Phenanthrene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Anthracene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Flouranthene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Pyrene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Benz(a)anthracene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Chrysene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Benzo(b)flouranthene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Benzo(k)flouranthene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Benzo(a)pyrene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Indeno(1,2,3-c,d)pyrene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Dibenz(a,h)anthracene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Benzo(g,h,i)perylene	mg kg^{-1}	<0.5	<0.5	N/A	N/A
Sum of Reported PAHs	mg kg^{-1}	<0.5	<0.5	N/A	N/A
OC & OP Pesticides and Total PCBs					
OCP Compounds	mg kg^{-1}	<0.05/<0.2	<0.05/<0.2	N/A	N/A
Total PCBs	mg kg^{-1}	<0.1	<0.1	N/A	N/A

NOTES:

Relative Percentage Difference (RPD) is calculated as the absolute value of the difference between original and replicate samples divided by the average and expressed as a percentage.
nd - Result is below the laboratory Practical Quantitation Limit.
N/A - not applicable.
BOLD RPD Exceeds acceptable Limit

Trip Blank

Parameter	Units	Trip Blank
Laboratory Batch:		**ES0802051**
Metals and Metalloids		
Arsenic	mg kg-1	<5
Cadmium	mg kg-1	<1
Chromium	mg kg-1	<2
Copper	mg kg-1	<5
Lead	mg kg-1	<5
Nickel	mg kg-1	<2
Zinc	mg kg-1	<5
Mercury	mg kg-1	<0.1
Total Petroleum Hydrocarbons		
TPH C_6-C_9	mg kg^{-1}	--
TPH C_{10}-C_{14}	mg kg^{-1}	--
TPH C_{15}-C_{28}	mg kg^{-1}	--
TPH C_{29}-C_{36}	mg kg^{-1}	--
Benzene, Toluene, Ethylbenzene and Total Xylenes		
Benzene	mg kg^{-1}	<0.2
Toluene	mg kg^{-1}	<0.5
Ethylbenzene	mg kg^{-1}	<0.5
m&p-Xylene	mg kg^{-1}	<0.5
o-Xylene	mg kg^{-1}	<0.5

NOTES:

BOLD Signifies parameter concentration detected in blank

Rinsate Results

Parameter	Units	Rinsate (Hand Auger) - 140208-20-SM
Laboratory Batch:		**ES0802051**
Metals and Metalloids		
Arsenic	µg L^{-1}	<0.001
Cadmium	µg L^{-1}	<0.0001
Chromium	µg L^{-1}	<0.001
Copper	µg L^{-1}	<0.001
Lead	µg L^{-1}	<0.001
Nickel	µg L^{-1}	<0.001
Zinc	µg L^{-1}	<0.005
Mercury	µg L^{-1}	<0.0001
Total Petroleum Hydrocarbons		
TPH C_6-C_9	µg L^{-1}	<20
TPH C_{10}-C_{14}	µg L^{-1}	<50
TPH C_{15}-C_{28}	µg L^{-1}	<100
TPH C_{29}-C_{36}	µg L^{-1}	<50
Benzene, Toluene, Ethylbenzene and Total Xylenes		
Benzene	µg L^{-1}	<1
Toluene	µg L^{-1}	<2
Ethylbenzene	µg L^{-1}	<2
Total xylene	µg L^{-1}	<2

NOTES:

BOLD Signifies parameter concentration detected in blank

Appendix J
Laboratory Certificates of Analysis

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0802051**	Page	: 1 of 14
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MS ANGELA MAROYA	Contact	: Ashwini Sharma
Address	: JONES BAY WHARF 19-21, LOWER DECK, SUITE 121, 26-32 PIRRAMA ROAD PYRMONT NSW, AUSTRALIA 2040	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: amaroya@consultingearth.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 85692200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 95524399	Facsimile	: +61-2-8784 8500
Project	: CES080106-WPG	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: 130219-20	Date Samples Received	: 15-FEB-2008
Sampler	: SM	Issue Date	: 21-FEB-2008
Site	: ERSKINE PARK		
		No. of samples received	: 15
Quote number	: SY/094/07	No. of samples analysed	: 15

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*
Celine Conceicao	Spectroscopist	Inorganics
EDWANDY FADJAR	Senior Organic Chemist	Inorganics
EDWANDY FADJAR	Senior Organic Chemist	Organics
Hoa Nguyen		Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics

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 preformed, 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 process purposes.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	140208-04-SM	140208-05-SM	140208-06-SM	140208-07-SM	140208-08-SM
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00
					ES0802051-004	ES0802051-005	ES0802051-006	ES0802051-007	ES0802051-008
EA055: Moisture Content									
^ Moisture Content (dried @ 103)	----	1.0	%		24.7	18.8	23.3	22.5	27.5
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		10	5	7	6	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		24	18	21	20	16
Copper	7440-50-8	5	mg/kg		23	26	18	19	22
Lead	7439-92-1	5	mg/kg		28	14	23	16	21
Nickel	7440-02-0	2	mg/kg		11	5	11	7	14
Zinc	7440-66-6	5	mg/kg		40	30	35	28	74
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	----	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	<0.05	----	----
4.4'-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	<0.05	----	----
4.4'-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	<0.05	----	----
4.4'-DDT	50-29-3	0.2	mg/kg		----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	<0.2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: 140208-04-SM Client sampling date / time: 14-FEB-2008 15:00 ES0802051-004	140208-05-SM 14-FEB-2008 15:00 ES0802051-005	140208-06-SM 14-FEB-2008 15:00 ES0802051-006	140208-07-SM 14-FEB-2008 15:00 ES0802051-007	140208-08-SM 14-FEB-2008 15:00 ES0802051-008
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	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)fluoranthene	205-99-2	0.5	mg/kg	----	----	<0.5	----	----
Benzo(k)fluoranthene	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	----	----
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	----	----
EP080: BTEX								
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	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**62.0**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	**93.4**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	**123**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	**107**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**109**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**97.6**	----	----
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	140208-04-SM	140208-05-SM	140208-06-SM	140208-07-SM	140208-08-SM
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00
					ES0802051-004	ES0802051-005	ES0802051-006	ES0802051-007	ES0802051-008
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.1	%		----	----	**86.6**	----	----
Anthracene-d10	1719-06-8	0.1	%		----	----	**98.6**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	**81.8**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	**97.0**	----	----
Toluene-D8	2037-26-5	0.1	%		----	----	**93.2**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	**98.0**	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	140208-09-SM	140208-10-SM	140208-11-SM	140208-12-SM	140208-13-SM
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00
					ES0802051-009	ES0802051-010	ES0802051-011	ES0802051-012	ES0802051-013
EA055: Moisture Content									
^ Moisture Content (dried @ 103)	----	1.0	%		17.6	23.5	19.9	22.0	21.8
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	8	7	6	7
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		13	24	23	16	18
Copper	7440-50-8	5	mg/kg		20	22	20	26	29
Lead	7439-92-1	5	mg/kg		18	24	18	24	24
Nickel	7440-02-0	2	mg/kg		10	15	15	14	15
Zinc	7440-66-6	5	mg/kg		26	40	38	53	54
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	<0.10	----	<0.10	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4'-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4'-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4'-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	<0.2	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	<0.5	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	140208-09-SM	140208-10-SM	140208-11-SM	140208-12-SM	140208-13-SM
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00
					ES0802051-009	ES0802051-010	ES0802051-011	ES0802051-012	ES0802051-013
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	<0.5	----
Acenaphthene	83-32-9	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)fluoranthene	205-99-2	0.5	mg/kg		----	----	----	<0.5	----
Benzo(k)fluoranthene	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	----
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	----
EP080: BTEX									
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	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**65.0**	----	**75.0**	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	**89.4**	----	**98.5**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		----	**124**	----	**133**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		----	----	----	**95.4**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		----	----	----	**92.5**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		----	----	----	**89.1**	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: 140208-09-SM	140208-10-SM	140208-11-SM	140208-12-SM	140208-13-SM
				Client sampling date / time: 14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00
				ES0802051-009	ES0802051-010	ES0802051-011	ES0802051-012	ES0802051-013
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	**84.4**	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	**94.3**	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	**81.0**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	**99.4**	----
Toluene-D8	2037-26-5	0.1	%	----	----	----	**99.9**	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	**106**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	TRIP BLANK	140208-01-SM	140208-02-SM	140208-03-SM	----
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	----
					ES0802051-014	ES0802051-016	ES0802051-017	ES0802051-018	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103)	----	1.0	%		3.4	19.7	19.4	19.1	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	7	7	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg		<2	20	22	19	----
Copper	7440-50-8	5	mg/kg		<5	10	10	17	----
Lead	7439-92-1	5	mg/kg		<5	18	18	14	----
Nickel	7440-02-0	2	mg/kg		<2	7	6	8	----
Zinc	7440-66-6	5	mg/kg		<5	21	18	24	----
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4'-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4'-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4'-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP BLANK Client sampling date / time: 14-FEB-2008 15:00 ES0802051-014	140208-01-SM 14-FEB-2008 15:00 ES0802051-016	140208-02-SM 14-FEB-2008 15:00 ES0802051-017	140208-03-SM 14-FEB-2008 15:00 ES0802051-018	---- ---- ----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**81.0**	**73.0**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	**103**	**105**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	**125**	**126**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	**65.8**	**74.2**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**88.1**	**89.2**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**61.6**	**58.5**	----	----
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP BLANK	140208-01-SM	140208-02-SM	140208-03-SM	----
				Client sampling date / time	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	14-FEB-2008 15:00	----
Compound	CAS Number	LOR	Unit		ES0802051-014	ES0802051-016	ES0802051-017	ES0802051-018	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.1	%		----	109	101	----	----
Anthracene-d10	1719-06-8	0.1	%		----	100	94.5	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		----	96.5	90.9	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		103	102	98.9	----	----
Toluene-D8	2037-26-5	0.1	%		100	98.3	96.3	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		108	102	101	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: 140208-20-SM	----	----	----	----
				Client sampling date / time: 14-FEB-2008 15:00	----	----	----	----
				ES0802051-015	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**114**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	**83.9**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**93.7**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	136
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES0802051**	Page	: 1 of 13
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MS ANGELA MAROYA	Contact	: Ashwini Sharma
Address	: JONES BAY WHARF 19-21, LOWER DECK, SUITE 121, 26-32 PIRRAMA ROAD PYRMONT NSW, AUSTRALIA 2040	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: amaroya@consultingearth.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 85692200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 95524399	Facsimile	: +61-2-8784 8500
Project	: CES080106-WPG	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ERSKINE PARK		
C-O-C number	: 130219-20	Date Samples Received	: 15-FEB-2008
Sampler	: SM	Issue Date	: 21-FEB-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: SY/094/07	No. of samples analysed	: 15

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*
Celine Conceicao	Spectroscopist	Inorganics
EDWANDY FADJAR	Senior Organic Chemist	Inorganics
EDWANDY FADJAR	Senior Organic Chemist	Organics
Hoa Nguyen		Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics

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 preformed, 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 = Chemistry Abstract Services number
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: 595357)									
ES0801737-002	Anonymous	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	16.2	11.1	37.4	0% - 50%
ES0802047-002	Anonymous	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	18.7	22.0	16.1	0% - 20%
EA055: Moisture Content (QC Lot: 595358)									
ES0802083-001	Anonymous	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	15.8	13.2	18.3	0% - 50%
ES0802083-006	Anonymous	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	25.8	28.4	9.6	0% - 20%
EA055: Moisture Content (QC Lot: 595419)									
ES0802050-001	Anonymous	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	26.9	26.1	3.1	0% - 20%
ES0802051-016	140208-01-SM	EA055-103: Moisture Content (dried @ 103)	----	1.0	%	19.7	18.7	5.6	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 595628)									
ES0801830-002	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	21	18	15.7	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	38	36	5.6	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
ES0802051-011	140208-11-SM	EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	21	10.1	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	20	18	7.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	18	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	38	36	4.0	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 595629)									
ES0801830-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES0802051-011	140208-11-SM	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 595414)									
ES0802083-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 595413)									
ES0802083-003	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	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 (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 595413) - continued									
ES0802083-003	Anonymous	EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 595347)									
ES0801737-026	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES0802065-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	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 (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 595347) - continued									
ES0802065-001	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 595418)									
ES0802051-016	140208-01-SM	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 595348)									
ES0801737-026	Anonymous	EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 595400)									
ES0802083-017	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES0802051-006	140208-06-SM	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 595417)									
ES0802051-016	140208-01-SM	EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		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
EP080: BTEX (QC Lot: 595400)									
ES0802083-017	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	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 (%)
EP080: BTEX (QC Lot: 595400) - continued									
ES0802083-017	Anonymous	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES0802051-006	140208-06-SM	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 595260)									
ES0802051-015	140208-20-SM	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES0802060-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.015	0.006	84.5	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 596688)									
EB0801738-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 595291)									
ES0801989-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES0802084-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 595681)									
ES0801989-001	Anonymous	EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 595291)									
ES0801989-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEX (QC Lot: 595291) - continued									
ES0801989-001	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	3	2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES0802084-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	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: 595628)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.1 mg/kg	101	86.6	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	98.1	79.9	120
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	101	87.1	119
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	103	85.2	117
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.2 mg/kg	98.7	82.1	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	54.8 mg/kg	104	88	122
EG005T: Zinc	7440-66-6	5	mg/kg	<5	104 mg/kg	97.9	79	116
EG035T: Total Mercury by FIMS (QCLot: 595629)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	83.7	73.7	108
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 595414)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	95.0	57.4	117
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 595413)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	66.4	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.25 mg/kg	70.0	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	59.6	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	62.9	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	57.0	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	80.2	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	70.0	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	66.1	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	65.4	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	89.6	65.8	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	66.4	57.3	120
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	89.9	67.4	116
EP068: 4.4¿-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	93.5	67.5	114
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	73.6	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	85.5	66.1	117
EP068: 4.4¿-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	88.9	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	72.8	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	67.5	63.6	119
EP068: 4.4¿-DDT	50-29-3	0.2	mg/kg	<0.2	0.25 mg/kg	67.9	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	79.1	63.6	117
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.25 mg/kg	108	50.4	132
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 595347)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	94.8	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	108	79.6	113

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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 595347) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	108	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	109	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	109	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	100	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	94.5	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	109	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	105	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	105	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	110	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	110	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	109	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	105	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	111	72.4	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 595418)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	109	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	85.6	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	101	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	110	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	109	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	108	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	80.4	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	110	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	102	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	107	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	98.9	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	108	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	107	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	80.7	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	79.5	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.6	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595348)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	94.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	82.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.0	72.6	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595400)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	105	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595417)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	94.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	88.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	91.0	72.6	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEX (QCLot: 595400)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	94.1	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.4	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	98.2	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.5	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.3	66.7	123

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 595260)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	78.7	111
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	79.3	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	83.4	114
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.7	80.1	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	83.2	116
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.0	84.3	115
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.1	77.2	109
EG035T: Total Mercury by FIMS (QCLot: 596688)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	102	78.6	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595291)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	82.5	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595681)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	200 µg/L	76.0	58.9	131
EP071: C15 - C28 Fraction	----	100	µg/L	<100	200 µg/L	78.5	73.9	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	200 µg/L	81.5	62.7	131
EP080: BTEX (QCLot: 595291)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.3	76.2	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	98.3	74.4	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.2	76.1	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	93.0	75.7	123
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	99.0	77.9	121

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: 595628)							
ES0801830-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	115	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	108	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	114	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	105	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	104	70	130
EG035T: Total Mercury by FIMS (QCLot: 595629)							
ES0801830-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 595414)							
ES0802051-006	140208-06-SM	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	88.9	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 595413)							
ES0802051-006	140208-06-SM	EP068: gamma-BHC	58-89-9	0.25 mg/kg	86.7	75.65	110.44
		EP068: Heptachlor	76-44-8	0.25 mg/kg	90.7	72.2	106.71
		EP068: Aldrin	309-00-2	0.25 mg/kg	90.1	77.54	107.0
		EP068: Dieldrin	60-57-1	0.25 mg/kg	88.3	76.37	109.7
		EP068: Endrin	72-20-8	1 mg/kg	94.9	68.51	119.47
		EP068: 4.4'-DDT	50-29-3	1 mg/kg	# 66.9	67.12	118.10
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 595347)							
ES0801737-026	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	103	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 595418)							
ES0802051-016	140208-01-SM	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.7	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595348)							
ES0801737-026	Anonymous	EP071: C10 - C14 Fraction	----	790 mg/kg	105	70	130
		EP071: C15 - C28 Fraction	----	3490 mg/kg	86.9	70	130
		EP071: C29 - C36 Fraction	----	2400 mg/kg	97.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595400)							
ES0802083-017	Anonymous	EP080: C6 - C9 Fraction	----	26 mg/kg	110	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595417)							
ES0802051-016	140208-01-SM	EP071: C10 - C14 Fraction	----	790 mg/kg	76.4	70	130
		EP071: C15 - C28 Fraction	----	3490 mg/kg	104	70	130
		EP071: C29 - C36 Fraction	----	2400 mg/kg	118	70	130
EP080: BTEX (QCLot: 595400)							

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: BTEX (QCLot: 595400) - continued							
ES0802083-017	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	79.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	99.3	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	95.0	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	93.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.5	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 595260)							
ES0802059-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.3	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	99.8	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.3	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	97.0	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	95.8	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.3	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	97.5	70	130
EG035T: Total Mercury by FIMS (QCLot: 596688)							
EB0801738-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	120	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595291)							
ES0801989-001	Anonymous	EP080: C6 - C9 Fraction	---	250 µg/L	73.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 595681)							
ES0801989-001	Anonymous	EP071: C10 - C14 Fraction	---	200 µg/L	120	70	130
		EP071: C15 - C28 Fraction	---	200 µg/L	124	70	130
		EP071: C29 - C36 Fraction	---	200 µg/L	75.0	70	130
EP080: BTEX (QCLot: 595291)							
ES0801989-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.8	70	130
		EP080: Toluene	108-88-3	25 µg/L	97.0	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	88.9	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	87.4	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0802051**	Page	: 1 of 8
Client	: CONSULTING EARTH SCIENTISTS	Laboratory	: Environmental Division Sydney
Contact	: MS ANGELA MAROYA	Contact	: Ashwini Sharma
Address	: JONES BAY WHARF 19-21, LOWER DECK, SUITE 121, 26-32 PIRRAMA ROAD PYRMONT NSW, AUSTRALIA 2040	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: amaroya@consultingearth.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 85692200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 95524399	Facsimile	: +61-2-8784 8500
Project	: CES080106-WPG	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ERSKINE PARK		
C-O-C number	: 130219-20	Date Samples Received	: 15-FEB-2008
Sampler	: SM	Issue Date	: 21-FEB-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: SY/094/07	No. of samples analysed	: 15

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							
140208-04-SM, 140208-05-SM, 140208-06-SM, 140208-07-SM, 140208-08-SM, 140208-09-SM, 140208-10-SM, 140208-11-SM, 140208-12-SM, 140208-13-SM, TRIP BLANK, 140208-01-SM, 140208-02-SM, 140208-03-SM	**14-FEB-2008**	**----**	----	----	**18-FEB-2008**	21-FEB-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
140208-04-SM, 140208-05-SM, 140208-06-SM, 140208-07-SM, 140208-08-SM, 140208-09-SM, 140208-10-SM, 140208-11-SM, 140208-12-SM, 140208-13-SM, TRIP BLANK, 140208-01-SM, 140208-02-SM, 140208-03-SM	**14-FEB-2008**	**19-FEB-2008**	12-AUG-2008	✓	**19-FEB-2008**	12-AUG-2008	✓
EG035T: Total Mercury by FIMS							
Soil Glass Jar - Unpreserved							
140208-04-SM, 140208-05-SM, 140208-06-SM, 140208-07-SM, 140208-08-SM, 140208-09-SM, 140208-10-SM, 140208-11-SM, 140208-12-SM, 140208-13-SM, TRIP BLANK, 140208-01-SM, 140208-02-SM, 140208-03-SM	**14-FEB-2008**	**19-FEB-2008**	12-AUG-2008	✓	**20-FEB-2008**	13-MAR-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
140208-06-SM, 140208-10-SM, 140208-12-SM, 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**18-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	29-MAR-2008	✓

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
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved 140208-06-SM, 140208-10-SM, 140208-12-SM, 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**18-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	29-MAR-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved 140208-06-SM, 140208-12-SM	**14-FEB-2008**	**18-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	29-MAR-2008	✓
Soil Glass Jar - Unpreserved 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**19-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	30-MAR-2008	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved 140208-06-SM, 140208-12-SM, 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**18-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	28-FEB-2008	✓
Soil Glass Jar - Unpreserved 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**19-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	30-MAR-2008	✓
EP080: BTEX							
Soil Glass Jar - Unpreserved 140208-06-SM, 140208-12-SM, TRIP BLANK, 140208-01-SM, 140208-02-SM	**14-FEB-2008**	**18-FEB-2008**	28-FEB-2008	✓	**19-FEB-2008**	28-FEB-2008	✓

Matrix: **WATER**

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered 140208-20-SM	**14-FEB-2008**	**19-FEB-2008**	12-AUG-2008	✓	**19-FEB-2008**	12-AUG-2008	✓
EG035T: Total Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered 140208-20-SM	**14-FEB-2008**	**----**	----	----	**20-FEB-2008**	13-MAR-2008	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved 140208-20-SM	**14-FEB-2008**	**19-FEB-2008**	21-FEB-2008	✓	**19-FEB-2008**	30-MAR-2008	✓
Amber VOC Vial - HCl or NaHSO4 140208-20-SM	**14-FEB-2008**	**---**	---	----	**19-FEB-2008**	28-FEB-2008	✓
EP080: BTEX							
Amber VOC Vial - HCl or NaHSO4 140208-20-SM	**14-FEB-2008**	**---**	---	----	**19-FEB-2008**	28-FEB-2008	✓

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	6	51	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	20	**15.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**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	10	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**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	2	10	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**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	2	10	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
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	2	10	**20.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

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)							
Total Mercury by FIMS	EG035T	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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) - Continued							
TPH - Semivolatile Fraction	EP071	1	12	**8.3**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	11	**9.1**	**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
Asbestos - Count (Solid)	ASB-SOL	SOIL	Asbestos Count on solid matrices using PLM conducted by Subcontracting Laboratory
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)
Polychlorinated Biphenyls (PCB)	EP066	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)
Pesticides by GCMS	EP068	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 504,505)
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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
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 for Purge and Trap	* ORG16	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 (Option A - Concentrating)	ORG17A	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

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

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	662289-002	----	**beta-BHC**	319-85-7	59.6 %	59.8-117%	**Recovery less than lower control limit**
EP068A: Organochlorine Pesticides (OC)	662289-002	----	**delta-BHC**	319-86-8	57.0 %	65.8-114%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	ES0802051-006	140208-06-SM	**4.4'-DDT**	50-29-3	66.9 %	67.12-118.10 %	**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

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	ES0802051-015	140208-20-SM	**Toluene-D8**	2037-26-5	83.9 %	88-110 %	**Recovery less than lower data quality objective**

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.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TPH - Semivolatile Fraction	1	12	8.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

CHAIN OF CUSTODY DOCUMENTATION

130219

ALS Laboratory Group

CLIENT:	CES	SAMPLER:	McCormack
ADDRESS / OFFICE:	Jones Bay Wharf Pyrmont	MOBILE:	0413601751
PROJECT MANAGER (PM):	McCormack	PHONE	" "
PROJECT ID:	CES80106-WPG	EMAIL REPORT TO:	ALL
SITE:	ERSKINE PARK. P.O. NO.:	EMAIL INVOICE TO: (if different to report)	ALL
RESULTS REQUIRED (Date):	20/2/08 QUOTE NO.:		

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	S8	S2 (metals)	S-11 (ca/Mg)	Asbestos
16	140208-01-SM	S	14/2		1st received 18/2/08 1st informed 18/2/08 ave.		X			X
17	02						X			
18	03							X		
4	04							X		X
5	05							X		
6	06						X			X
7	07							X		
8	08							X		X
9	09							X		
10	10							X	X	X
11	11							X		
12	12						X			X

CONTRACT WORK
WO: ES0802051
LAB: ASET Asbestos
DATE: 19/2/08
SPLIT:

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Environmental Division
Sydney
Work Order
ES0802051

Telephone : +61-2-8784 8555

RELINQUISHED BY:			RECEIVED BY			
Name:	S. McCormack	Date: 15/2/08	Name:	Received 18/2/08 2:30pm	Date: 15-2-08	METHOD OF SHIPMENT
Of:	CES	Time: 9:30am	Of:	ALS	Time: 1-45	Con' Note No:
Name:		Date:	Name:	FAST	Date: 15/2/8	Transport Co:
Of:		Time:	Of:	ALS	Time: 5:30	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserveed 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.

CHAIN OF CUSTODY DOCUMENTATION

130220

ALS Laboratory Group

CLIENT:	SAMPLER:
ADDRESS / OFFICE:	MOBILE:
PROJECT MANAGER (PM): As Prev	PHONE As Prev
PROJECT ID:	EMAIL REPORT TO:
SITE: P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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		S-8	S-2	S-11	As Boron	BTEX		W-5						
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
13	140208-13-SM	S	14/2			1		X											
~~14~~	"																		
14	TRIP BLANK	S	14/2			1		X			X								
15	140208-20-SM	W	14/2			1		X					X						

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: S-Miller mail	Date:	Name:	Date: 15-2-18	Con' Note No:
Of: CES	Time:	Of: ALS	Time: 1-45	
Name:	Date:	Name: MDi	Date: 151218	Transport Co:
Of:	Time:	Of: ALS	Time: 5:30pm	

received 18/2/18 2:30pm

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserveed 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.

ALS Laboratory Group

WHITE - LAB COPY
YELLOW - CUSTOMER COPY
PINK - BOOK COPY

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **ES0802051**

Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MS ANGELA MAROYA	Contact	: Ashwini Sharma
Address	: JONES BAY WHARF 19-21, LOWER DECK, SUITE 121, 26-32 PIRRAMA ROAD PYRMONT NSW, AUSTRALIA 2040	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: amaroya@consultingearth.com.au	E-mail	: Victor.Kedicioglu@alsenviro.com
Telephone	: +61 85692200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 95524399	Facsimile	: +61-2-8784 8500
Project	: CES080106-WPG	Page	: 1 of 3
Order number	: ----		
C-O-C number	: 130219-20	Quote number	: ES20070141 (SY/094/07)
Site	: ERSKINE PARK		
Sampler	: SM	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 15-FEB-2008	Issue Date	: 18-FEB-2008 13:12
Client Requested Due Date	: 20-FEB-2008	Scheduled Reporting Date	: **20-FEB-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: CHILLED - Ice bricks present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 12
Sercurity Seal	: Intact.	No. of samples analysed	: 12

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.
- Asbestos analysis will be subcontracted to ASET.
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Samples 140208-01-SM,140208-02-SM,140208-03-SM was not received.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- 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 process purposes.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP080 BTEX	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-08 TPH/BTEX/PAH/OC/PCB/8 Metals	SOIL - S-11 OC/PCB
ES0802051-004	14-FEB-2008 15:00	140208-04-SM		✓		
ES0802051-005	14-FEB-2008 15:00	140208-05-SM		✓		
ES0802051-006	14-FEB-2008 15:00	140208-06-SM			✓	
ES0802051-007	14-FEB-2008 15:00	140208-07-SM		✓		
ES0802051-008	14-FEB-2008 15:00	140208-08-SM		✓		
ES0802051-009	14-FEB-2008 15:00	140208-09-SM		✓		
ES0802051-010	14-FEB-2008 15:00	140208-10-SM		✓		✓
ES0802051-011	14-FEB-2008 15:00	140208-11-SM		✓		
ES0802051-012	14-FEB-2008 15:00	140208-12-SM			✓	
ES0802051-013	14-FEB-2008 15:00	140208-13-SM		✓		
ES0802051-014	14-FEB-2008 15:00	TRIP BLANK	✓	✓		

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - W-05T TPH/BTEX/8 Metals (Total)
ES0802051-015	14-FEB-2008 15:00	140208-20-SM	✓

Requested Deliverables

MR STEPHEN MCCORMACK

- *AU Certificate of Analysis - NATA	Email	smccorm@consultingearth.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	smccorm@consultingearth.com.au
- *AU QC Report ¿ DEFAULT (Anon QC Rep) - NATA	Email	smccorm@consultingearth.com.au
- A4 - AU Sample Receipt Notification - Environmental	Email	smccorm@consultingearth.com.au
- Default - Chain of Custody	Email	smccorm@consultingearth.com.au
- EDI Format - ENMRG	Email	smccorm@consultingearth.com.au
- Trigger - Subcontract Report	Email	smccorm@consultingearth.com.au

MS ANGELA MAROYA

- *AU Certificate of Analysis - NATA	Email	amaroya@consultingearth.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep)	Email	amaroya@consultingearth.com.au
- *AU QC Report ¿ DEFAULT (Anon QC Rep) - NATA	Email	amaroya@consultingearth.com.au
- A4 - AU Sample Receipt Notification - Environmental	Email	amaroya@consultingearth.com.au
- Default - Chain of Custody	Email	amaroya@consultingearth.com.au
- EDI Format - ENMRG	Email	amaroya@consultingearth.com.au
- Trigger - Subcontract Report	Email	amaroya@consultingearth.com.au

THE CES ACCOUNTS

- A4 - AU Tax Invoice	Email	cesaccnt@consultingearth.com.au

THE SUB RESULTS

- EDI Format - EQUIS V5	Email	subresults.syd@alsenviro.com

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET14411/ 17591 / 1 - 5
Your ref: ES0802051
NATA Accreditation No: 14484

20 February 2008

Australian Laboratory Services Pty. Ltd.
277 Woodpark Road
Smithfield NSW 2164

Attn: Mr Victor Kedicioglu

Dear Victor,

Asbestos Identification
This report presents the results of five samples, forwarded by Australian Laboratory Services Pty. Ltd on 18 February 2008, for analysis for asbestos.

1.Introduction: Five samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Safer Environment Method 1.)**

3. Results :

Sample No. 1. ASET14411 / 17591 / 1. ES0802051 - 4 - 140208 - 04 - SM.
Approx dimensions 6.0 cm x 5.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET14411 / 17591 / 2. ES0802051 - 6 - 140208 - 06 - SM.
Approx dimensions 6.0 cm x 5.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 3. ASET14411 / 17591 / 3. ES0802051 - 8 - 140208 - 08 - SM.
Approx dimensions 6.0 cm x 5.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 4. ASET14411 / 17591 / 4. ES0802051 - 10 - 140208 - 10 - SM.
Approx dimensions 6.0 cm x 5.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET14411 / 17591 / 5. ES0802051 - 12 - 140208 - 12 - SM.
Approx dimensions 6.0 cm x 5.0 cm x 1.0 cm
The sample consisted of a mixture of clayish soil, stones and plant matter.
No asbestos detected.

Analysed and reported by,

Karu Jayasundara. BSc (Hons) MAus IMM.
Mineralogist / Chartered Professional of Geology
Approved Signatory / Approved Identifier.

This document is issued in accordance with NATA's Accreditation requirements.
Accredited for compliance with ISO/IEC 17025.