

STATEMENT OF ENVIRONMENTAL AUDIT



ENVIRONMENT PROTECTION ACT 1970

STATEMENT OF ENVIRONMENTAL AUDIT

I, Mr Steven Jon Kirsanovs of Kirs Environmental Pty Ltd, a person appointed by the Environment Protection Authority ('the Authority') under the Environment Protection Act 1970 ('the Act') as an environmental auditor for the purposes of the Act, having:-

1. been requested by Mr. Stewart Frater of Mobil Oil Australia Pty Ltd, to issue a certificate of environmental audit in relation to the site located at 151-153 Church Street, Geelong West, Victoria, comprising Vol 8666 Fol 665 (Lot 1 on TP 382065X) ("the site") owned by Dags Wash Pty Ltd,
2. had regard to, among other things,
 - i. guidelines issued by the Authority for the purposes of Part IXD of the Act,
 - ii. the beneficial uses that may be made of the site, and
 - iii. relevant State environment protection policies/industrial waste management policies, namely
 - SEPP Prevention and Management of Contamination of Land
 - SEPP Waters of Victoria
 - SEPP Groundwaters of Victoria
 - Environment Protection (Industrial Waste Resource) Regulations 2009in making a total assessment of the nature and extent of any harm or detriment caused to, or the risk of any possible harm or detriment which may be caused to, any beneficial use made of the site by any industrial processes or activity, waste or substance (including any chemical substance), and
3. completed an environmental audit report in accordance with Section 53X of the Act, a copy of which has been sent to the Authority and the relevant planning and responsible authority.

HEREBY STATE that I am of the opinion that:

The site is suitable for the beneficial uses associated with sensitive use (high density residential), sensitive use (other), recreation / open space, commercial and industrial use, subject to the following conditions attached thereto:-

- a. Any future buildings on site that include basements or cellars (except for buildings with basement areas that are not enclosed) must be provided with a vapour mitigation system. The system must be designed by a suitably qualified professional and the design must be accepted by an environmental auditor appointed under Part IXD of the *Environment Protection Act 1970*, and this acceptance be provided in writing to EPA and the planning authority.
- b. If condition a. above is triggered, the vapour mitigation system must be installed by a suitably qualified professional and the installation confirmed in writing to EPA and the planning authority at completion.
- c. Any future redevelopment involving excavation works beyond 2.5m depth within the site, must be carried out in accordance with an Occupational Health and Safety Plan developed by a suitably qualified professional, to manage potential exposures to hydrocarbon vapours during the excavation works. Prior to works commencing, the plan must be accepted by an environmental auditor appointed under Part IXD of the *Environment Protection Act 1970*, and this acceptance must be provided in writing to EPA and the planning authority.

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- d. Groundwater under the site is polluted and should not be used for stock watering, primary contact recreation, or industrial uses.
- e. Ongoing groundwater monitoring must be carried out in accordance with the Groundwater Quality Management Plan accepted by the environmental auditor and attached to the Statement of Environmental Audit (Coffey Environments, 2 Aug 2012).
- f. The Groundwater Quality Management Plan must remain in force until such time as an environmental auditor (appointed under Part IXD of the *Environment Protection Act 1970*) confirms to the EPA and the planning authority via a Section 53V audit that the monitoring and management program is no longer required.

The condition of the site is detrimental or potentially detrimental to any (one or more) beneficial uses of the site. Accordingly, I have not issued a Certificate of Environmental Audit for the site in its current condition, the reasons for which are presented in the environmental audit report. The terms and conditions that need to be complied with before a Certificate of Environmental Audit may be issued are set out as follows:-

- o The groundwater pollution from on and off site sources would need to be cleaned up so that protected beneficial uses are restored, or a risk assessment conducted to demonstrate that all beneficial uses are protected.
- o The hydrocarbon impacted soil under the site would need to be cleaned up, or a risk assessment conducted to demonstrate that all beneficial uses are protected.

Other related information:-

- o The Authority (ie. The Victorian EPA) has determined that groundwater has been cleaned up to the extent practicable.
- o The site has been declared to be within a Groundwater Quality Restricted Use Zone ("GQRUZ").
- o The condition of groundwater does not preclude the beneficial uses of 'maintenance of ecosystems' and 'buildings and structures'.
- o In accordance with Clause 19(3) of SEPP Groundwaters of Victoria, the Authority may require periodic reassessment of the practicability of groundwater clean up.
- o Some soil below 2.5m depth at the site may contain odours. This material is not considered to represent a health or environmental risk but may cause a noticeable odour if exposed during development or occupation of the site.
- o Any fill or soil imported to the site must be chemically tested soil or fill that classifies as "fill material" in accordance with relevant EPA guidelines.
- o Any disposal of soils from the site, or importation of soils onto the site, should be conducted in accordance with relevant EPA policies and guidelines.
- o Any disposal of groundwater from the site should be conducted in accordance with relevant EPA policies and guidelines.
- o In accordance with Section 53ZE of the *Environment Protection Act 1970* the

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owner/occupier of the site must provide a copy of the Statement of Environmental Audit to any person who becomes or proposes to become an occupier of the site.

- o Not all land uses for which this land is considered suitable by this audit may be allowed under the existing zoning of the Greater Geelong Planning Scheme.

This Statement forms part of environmental audit report (*Environmental Audit Report, 151-153 Church Street, Geelong West, Vic, Kirsa Environmental Pty Ltd, Report Ref 20125176, 21 Dec 2012*). Further details regarding the condition of the site may be found in the environmental audit report.

Dated: - 21 December 2012

Signed:- ... 

Steven Jon Kirsanovs
ENVIRONMENTAL AUDITOR

AUDIT STATEMENT ANNEX 1 (GROUNDWATER QUALITY MANAGEMENT PLAN)



**GROUNDWATER QUALITY MANAGEMENT PLAN
FORMER MOBIL GEELONG WEST SERVICE
STATION (VO0993)
151 CHURCH STREET, GEELONG WEST,
VICTORIA**

Prepared for:

Mobil Oil Australia Pty Ltd
Level 13, 28 Freshwater Place
Southbank, VIC 3000

Report Date: 2 August 2012
Project Ref: ENVIABTF07113EB_GMP_R01

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ABBREVIATIONS

BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
C₆-C₃₆	Hydrocarbon chain length fraction
Coffey Environments	Coffey Environments Australia Pty Ltd
EPA	Environment Protection Authority
Groundwater SEPP	State Environment Protection Policy (Groundwaters of Victoria)
HRA	Health Risk Assessment
LOR	Limit of Reporting
mbgs	Metres Below Ground Surface
mBTOC	Metres below top of casing
Mobil	Mobil Oil Australia Pty Ltd
MW	Groundwater Monitoring Well
NEPM	National Environment Protection Measure
PSH	Phase Separated Hydrocarbon
TEA	Tank Excavation Assessment
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank

1 INTRODUCTION

Mobil Oil Australia Pty Ltd (Mobil) contracted Coffey Environments Pty Ltd (Coffey Environments) to prepare a Groundwater Monitoring Plan (GMP) for the former Mobil Geelong West (VO0993) Service Station (the site), located at 151 Church Street, Geelong West, Victoria (the site).

The site is a former service station that was decommissioned in 1997. All infrastructure, including petroleum infrastructure, was removed from the site at that time. Between 1997 and 2011, remediation works were conducted at the site, including a combination of excavation and soil treatment and/or off-site disposal, MultiPhase Extraction and Air Treatment (MPEAT) events and injection of oxidants.

A Clean Up to the Extent Practicable (CUTEP) Report has been prepared documenting the remediation works conducted at the site, and recommending that no further remediation works be conducted at the site as no active remediation approach would effectively recover a significant mass of hydrocarbon cost effectively.

This Groundwater Management Plan (GMP) prepared for this site is to be implemented in accordance with EPA Publication 840.

2 OBJECTIVE OF GROUNDWATER MANAGEMENT PLAN

The objective of the Groundwater Management Plan (GMP) is to outline the strategy to manage the residual groundwater pollution in accordance with the requirements of EPA Publication 840 'The Clean Up and Management of Polluted Groundwater'.

In accordance with the Groundwater SEPP, and guidelines from EPA Victoria, where groundwater has been polluted:

- Groundwater should be cleaned up such that the protection of beneficial uses (existing and potential) is restored. In some cases this will not be possible or feasible, however, in all cases polluted groundwater must be cleaned up to the extent practicable.
- Clean up and management (i.e. Groundwater Management Plan) must address the full extent of groundwater pollution both on-site and off-site.

3 GROUNDWATER MANAGEMENT PLAN ELEMENTS

The elements and attributes of a GMP include the following:

- Clean up objectives are set out;
- Aquifers and groundwater at the site are characterised;
- Groundwater contamination at the site is characterised;
- Necessary further characterisation of groundwater contamination is proposed;
- Technology assessment and pilot trials currently being undertaken are referenced;
- Consideration of Clean Up To the Extent Practicable (CUTEP) has been made;
- A groundwater monitoring programme is proposed;
- The quality assurance programme is outlined;
- Triggers levels/ points and contingency plan are proposed;
- Possible controls on use of polluted groundwater are described;
- Periodic review of the practicability of clean up of polluted groundwater will be required as specified by the Groundwater SEPP in the event that CUTEP is achieved and a GQRUZ is declared;
- The necessary conditions for cessation of groundwater management are included; and
- An information and communication plan is outlined.

4 GROUNDWATER MONITORING PLAN DETAILS

4.1 Clean up Objectives

Laboratory analytical results of total dissolved solids (TDS) of the site's groundwater generally ranged between 5000 mg/L to 10,000 mg/L, which classifies the groundwater as Segment C based on the State Environment Protection Policy (SEPP) Groundwaters of Victoria. Segment C groundwater has therefore been adopted for the purposes of this investigation, having protected beneficial uses of:

- Maintenance of Ecosystems,
- Stock Watering,
- Industrial Water Use,
- Primary Contact Recreation, and
- Buildings and Structures.
- The ultimate clean up objectives for the site are to restore all of these potential beneficial uses.

It was noted that as there is no groundwater quality objective for TPH, the adopted value for TPH C₁₀-C₃₆ (600 µg/L) for the beneficial uses of maintenance of ecosystems, stock watering and primary contact recreation was developed by the Netherlands Ministry of Housing for "mineral oil". The adopted values for groundwater quality objectives for the site are presented below.

Table 4.1. Groundwater Quality Objective, Former Mobil Geelong West Service Station

Contaminant	Groundwater Quality Objective
TPH (C ₆ -C ₉)	150 ⁴
TPH (C ₁₀ -C ₃₆)	600 ⁴
Benzene	1 [^]
Toluene	25 [^]
Ethylbenzene	3 [^]
Total Xylenes	20 [^]
Benzo(a)pyrene	0.01
Naphthalene	70
Arsenic	50
Copper	13
Lead	4.4
Nickel	70
Vanadium	100
Zinc	15
Manganese	100
Nitrate (as N)	10 [#]
Sulphate	400

Notes:

1 = ANZECC/NHMRC 2000 Australian Water Quality Guidelines for Marine Waters (95 %).

2 = ANZECC 2000 – Primary Industry - Livestock

3 = ANZECC 2000 - Recreational Water Quality and Aesthetics

4 = Dutch Criteria

[^] = Please note these are aesthetic criteria from NHMRC/NRMMC 2004

[#] = Please note criteria for potable water from ANZECC (1992) adopted in the absence of other criteria.

µg/L = Micrograms per Litre

NE = Guidelines not established

4.2 Aquifers and Groundwater at the Site

4.2.1 Site Geology

Site specific subsurface geological profile encountered during previous investigation work is summarised below:

Table 2.1 – Site Specific Geology

Depth Range (mbgl)	Soil Type
0.0 - 0.2	Fill, gravel, coarse sand and clay.
0.2 - 1.2	Gravelly sandy clay and clay to silty clay, dark brown with some calcareous material at other drilling locations.
1.2 - 9.5	Fine sand with minor clay and silt across the entire site. Interbedded weathered basalt to a depth of 1.8 mbgs at the west and northwest portion of the site (MW28 and MW29).
9.5 - 10.8	Clay to sandy silty clay, grey to brown, with large (<30mm) chips of calcareous sediments (Geoprobe refusal) at well locations MW27 and MW32.
10.8 - 15	Fine Sandy Silty Clay, light brown, moisture content greater than plasticity limit and increasing with depth. Saturated at 14.5 m to 15 m.

The observed site geology corresponds with the expected geological units: Clay and calcarenite of the Fyansford Formation overlain by sediments of the Moorabool Viaduct Formation, with interbedded basalt associated with the Newer Volcanic in the western portion of the site.

4.2.2 Site Hydrogeology

Site specific hydrogeology is summarised in the table below.

Table 4.2.2 - Site Specific Hydrogeology

Item	Description
Depth to groundwater	Depth to groundwater across the wells investigated ranged between 7.959 mBTC (MW40) and 9.320 (MW50) during the February 2012 GME.
Groundwater Occurrence	Groundwater was encountered during previous drilling works in a fine sand water bearing zone between 7 to 10 m. Deeper monitoring wells MW27, MW28 and the newly installed MW55 (with screen intervals between 12 and 13 mbgs) reported water levels at the same level as the shallow wells screened within the shallow water bearing zone. This indicates groundwater is in an unconfined aquifer, given the level of hydraulic connection between the two water bearing zones.
Gradient and Groundwater Flow Direction	The average hydraulic gradient across the site was 0.006 (MW10 to MW41) in February 2012. The flow direction was found to be north-east, which is consistent with previous findings. The groundwater gradient plan for February 2012 is shown on Figure 8.
Hydraulic Conductivity	Transmissivity values determined from the 2004 pumping test ranged between 7.8 and 12.4 m ² / day, equating to a hydraulic conductivity of 4.7 to 7.4 m/ day. The estimated hydraulic conductivity values are consistent with the published values of 0.017 m/ day to 17 m/ day for fine sand (Domenico and Schwartz, 1990).

Item	Description
Seepage Velocity	Using the estimated average hydraulic gradient of 0.006 and assuming an effective porosity of between 0.25 and 0.30 (based on the 2004 aquifer test), the seepage velocity (i.e., the average linear groundwater velocity) in the aquifer, is estimated to range between 37 to 58 m per year. Seepage velocity was found to be consistent with previous findings.
Beneficial Uses of Groundwater that require protection.	Field based total dissolved solids recorded during the current investigation ranged between 2,048 mg/L (MW18) and 10,829 mg/L (MW27). The high TDS concentrations in a number of monitoring wells are considered attributable to RegenOxTM and ORC remediation activities. Previous laboratory analysed total dissolved solids (TDS) generally range between 5000 mg/L to 10,000 mg/L, which classifies the groundwater as Segment C based on the State Environment Protection Policy (SEPP) Groundwaters of Victoria. Segment C groundwater has therefore been adopted for the purposes of this investigation, having protected beneficial uses of: • Maintenance of Ecosystems, • Stock Watering, • Industrial Water Use, • Primary Contact Recreation, and • Buildings and Structures.

5 GROUNDWATER CONTAMINATION AT THE SITE

It is considered that dissolved phase hydrocarbons (benzene, TPH C₆-C₉ and TPH C₁₀-C₃₆), are delineated in all directions both on and off site, except to the north, south and west of MW25 and to the north and west of MW2 (according to previous investigations conducted at the site). However, it is considered likely hydrocarbon impact in MW25 is associated with a separate contamination plume.

One off-site groundwater monitoring well MW31 (located in the driveway of the adjacent residential property) is down gradient of the dissolved phase plume and has historically reported petroleum hydrocarbon concentrations above criteria. However, the past three recent rounds of sampling (March 2011, May 2011 and February 2012) reported concentrations below laboratory LOR for all targeted analytes.

It is noted that the most recent February 2012 monitoring event recorded elevated concentrations of dissolved hydrocarbons in off-site locations to the north (MW14, located in a nature strip across Church St) and west of the site (MW24).

Phenolic compounds were detected (below the adopted criteria) in three on-site monitoring wells (MW46, MW47 and MW54) during the previous May 2011 event and in four on-site monitoring wells during the most recent February 2012 event.

The February 2012 event reported concentrations of PAHs (as naphthalene) above the adopted criteria for on-site monitoring well MW47 (located down-gradient of the former tank farm). PAH impact was reported in two on-site monitoring wells (MW46 and MW47) below the adopted criteria.

- The effects of the residual hydrocarbon contamination (vapour, soil and groundwater) on the beneficial use 'Human Health' has been assessed by quantitative risk assessments.
- These concluded that the contamination remaining at the site poses an unacceptable risk to:
- On-site and off-site construction workers (undertaking excavation (at a depth of 2.5 mbgs) via direct contact with contaminated soil or groundwater, and via inhalation of vapour).
- On-site and off-site maintenance workers working in a 1 m trench or maintenance pit via inhalation of vapour.

5.1 Technology Assessment

The technical, logistical and financial considerations related to remediation previously undertaken at the site were provided in the CUTEP Report (Coffey, 2011). An assessment of the practicability of further remediation at the site was also provided in the CUTEP Report.

A combination of remediation technologies including Multiphase Extraction and Air Treatment (MPEAT) events, injection of oxidants and excavation were applied at the site.

- Twenty-two days of MPEAT events were conducted between August 2008 and November 2010, of which 16 were combined with injection of oxidant:
- All impacted soil to a depth of 5 mbgs was excavated, treated and/or disposed of offsite.

The CUTEP Report indicated that no active remediation approach will effectively recover a significant mass of hydrocarbon cost effectively.

5.2 Consideration of Clean Up To the Extent Practicable (CUTEP)

A CUTEP report was prepared by Coffey Environments in November 2011. The intent of the CUTEP report was to provide the Auditor with a report for consideration of a possible submission to EPA for determination of CUTEP.

In considering whether or not it would be appropriate to apply further remedial technologies at the site, the following points were considered important:

- Remediation works already performed (i.e. source removal, Multiphase Vapour Event (MPVE) events combined with injection of oxidants) have remediated the LNAPL impact and significantly reduced the concentration and extent of dissolved hydrocarbons impact in the groundwater.
- Elevated concentrations of hydrocarbons in groundwater had been shown to be not posing a risk to current site use or off site beneficial uses of land or groundwater.
- Elevated concentrations of hydrocarbons were not expected to migrate further off site, which is far short of the distance to the nearest surface water receptors located some 1.5 km metres from the site.

Overall, it had been concluded that site remedial works had removed all known sources of soil contamination that were considered to be impacting groundwater, with the exception of any contamination that remained in the smear zone or areas that were not able to be excavated.

On the basis of the above considerations, it was considered that the net benefit of applying any further remedial measures would be small to negligible, especially considering the fate and transport modelling predictions and that the risk to beneficial users of land was also considered negligible in terms of current site use.

5.3 Groundwater Monitoring Programme

The details of the groundwater monitoring programme (GMP) are as follows (please refer to Figure 3 for groundwater monitoring wells to be retained for ongoing monitoring):

- The GMP is to be undertaken by a qualified and experience environmental practitioner;
- Six-monthly gauging (and sampling when no NAPL present) of on-site groundwater monitoring well MW43 and off-site groundwater monitoring wells MW14, MW24 and MW31;
- Annual gauging and sampling of off-site groundwater monitoring wells MW16, MW18, MW25 and MW40;
- Field parameters are to be collected at the time of sampling and shall include pH, temperature, electrical conductivity, dissolved oxygen and redox potential;
- The parameters to be analysed are TPH, BTEX and Lead;
- Natural attenuation indicator parameters are to be analysed annually from on-site groundwater monitoring well MW43 and off-site groundwater monitoring wells MW24 and MW31; and
- Groundwater sampling is to be continued until the clean up objectives are met or an Environmental Auditor determines that monitoring can cease.

5.4 Quality Assurance Programme

- The quality assurance of the groundwater monitoring programme is to be consistent with EPA Publication 668 and EPA Publication 669 to assure quality of data, including the QC programme for sampling.
- The groundwater monitoring program is to be undertaken by a trained and qualified staff;
- Groundwater monitoring wells are to be installed in accordance with EPA Publication 669;
- Groundwater samples taken during on-going monitoring at the site will be collected using sampling method in accordance with the Groundwater Sampling Guidelines (EPA Publication 669, April 2000);
- Handling of groundwater samples is to be consistent with the EPA Publication 669;
- Quality control measures (i.e. collection of duplicates, triplicates and blank samples) in any future monitoring event are to be undertaken and reported in accordance with Section 4.3 of the EPA Publication 669 in order to verify the reliability of the data presented. This may include the selection of laboratories which use comparable techniques for specific compounds or analytes, so that the difference between laboratory data (reproducibility) can be correctly evaluated;
- Documented Standard Operating Procedures (SOP's) will be employed for the works conducted; and
- The groundwater monitoring programme will be conducted in accordance with Coffey Environments' quality system.

5.5 Triggers Levels/ Points and Contingency Plan

Trigger Levels and Contingency Plans are summarised below.

Trigger Levels and Events (from Baseline Groundwater Monitoring Event (GME) February 2012)

- The trigger for the implementation of contingency measures will be either:
- The presence of detectable LNAPL in any of the groundwater monitoring wells;
- Groundwater contamination concentrations exceeding the theoretical solubility of the hydrocarbon contaminants as a component of fuel hydrocarbons. In the case of benzene, groundwater concentrations in excess of 30 mg/L would be an appropriate basis for a trigger; or
- Groundwater contamination concentration(s) trends increase over three consecutive groundwater monitoring events.

Contingency Measures

- If any of the above trigger levels occurs, the Auditor shall be notified and confirmatory sampling will be undertaken to confirm the groundwater contamination concentration(s). If the trigger is confirmed, the frequency of the monitoring program shall be increased to every three months;
- If any of the above trigger levels persists, the Auditor will be notified and consulted and the Auditor's endorsement and recommendations for appropriate remediation will be undertaken if deemed necessary;
- No further action will be required unless one of the above trigger conditions occurs over three consecutive monitoring rounds (based on a three monthly schedule);

- If the trigger is not encountered at the second monitoring round (that is, after three months), then the monitoring program will revert to a six monthly program;
- If persistent LNAPL is encountered in any of the wells (occurring at more than three consecutive monitoring rounds) then the significance of the contamination should be assessed with the Environmental Auditor and with the EPA, and appropriate measures (e.g. further clean up) undertaken as may be agreed to address the LNAPL contamination.

5.6 Controls on Use of Polluted Groundwater

- Affected landholders or subsequent landholders will be provided with information about the groundwater contamination at the site. Affected landholders or subsequent landholders will also be notified not to use the impacted groundwater underneath the site for any one of the precluded groundwater beneficial uses. The forum in which this occurs will be agreed between Mobil, the EPA and the Auditor.
- In summary, the following beneficial uses of groundwater are precluded by impacts at the site:
- Agriculture, parks and gardens;
- Stock watering;
- Industrial; and
- Primary contact recreation.
- These beneficial uses of groundwater are neither existing or likely at or in the vicinity of the site due to groundwater quality variability (background TDS), low aquifer yield (silty clays), inconsistency of most of these beneficial uses with the existing and likely long term uses of the site and surrounding areas. There is no down gradient registered groundwater bore within 1000 m of the site.

5.7 Periodic Review of the Practicability of Clean Up of Polluted Groundwater

- Once CUTEP has been determined (if protected beneficial uses are still precluded) the EPA may require a periodic review of the practicability of groundwater clean up. This should include:
- Research of new/updated (and available) clean up technologies (after 3 years);
- Data from the groundwater monitoring program (e.g. geochemical data, plume/contaminant migrations, contaminant concentration and transformations); and
- Updated assessment of the risk posed to existing and potential uses of the groundwater, both on-site and off-site (e.g. toxicological data).

5.8 Cessation of Groundwater Management

- The management of groundwater (including water quality monitoring) shall be maintained until such time that either:
- All protected beneficial uses of the groundwater at the Site have been restored; or
- The Environmental Auditor advises (in consultation with the EPA) that the monitoring program can be ceased.

5.9 Information and Communication Plan

- As noted, affected landholders or subsequent landholders will be provided with information about the groundwater contamination at the site. Affected landholders or subsequent landholders will also be notified not to use the impacted groundwater underneath the site for any one of the precluded groundwater beneficial uses. The forum in which this occurs will be agreed between Mobil, the EPA and the Auditor.

In addition, provision of information relating to groundwater contamination and associated risks will be provided to utility operators in the affected area.

The results of the groundwater monitoring programme and the information about the site conditions will be provided to the Auditor within 4 weeks of receipt of field and laboratory data following individual monitoring events.

6 REFERENCES

The following reference was used in the Groundwater Management Plan. This document should be read in conjunction with this report.

Coffey Environments (2011), *Clean Up To the Extent Practicable (CUTEP) Report, Former Mobil Geelong West (VO0993) Service Station, 151 Church Street, Geelong West, Victoria*. Preliminary Final report dated 29 November 2011.

EPA Publication 840, *The Clean Up and Management of Polluted Groundwater*, April 2002.

EPA Publication 668, *Hydrogeological Assessments*, April 2000

EPA Publication 669, *Groundwater Sampling Guidelines*, April 2000.

Netherlands Groundwater Gazette (February 2000), *Circular on target values and intervention values for soil remediation*.

Important information about Coffey Environments Report for Mobil

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey Environments and applies only to the site or area investigated.

Scope of Investigations

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within practical time and budgetary constraints, and in reliance on certain data and information made available to Coffey Environments. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

Report Conclusions

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. The report will set out conclusions derived from the use of relevant industry and regulatory authority recognised sampling regimes, standards, protocols, guidelines and assessment principles. Analysis of the data so collected allows an expression of opinion to be provided based upon the absence of concentrations of concern in excess of risk assessment levels so as to

provide a characterisation (to industry and regulatory body accepted levels of estimated certainty) of conditions with respect to potential contaminants. The report accordingly is not a guarantee that the condition of the Property could not be different at intermediate points between sampling locations or at different parts of the Property.

Your report is prepared for specific purposes and persons

Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey Environments to work with other professionals who are affected by the report. Have Coffey Environments explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Reliance

This report has been provided by Coffey Environments for the benefit of Mobil and the purchaser from Mobil (but not that purchaser's successors in title) where a site is owned by Mobil and also for the benefit of Mobil and the third party owner or assignee from Mobil (as the case may be) but not their respective successors in title where a site is/was leased by Mobil.

In this report a reference to "Mobil" means:

- (a) (i) Mobil Oil Australia Pty Ltd ABN 88 004 052 984; or
- (ii) An Affiliate of Mobil; and

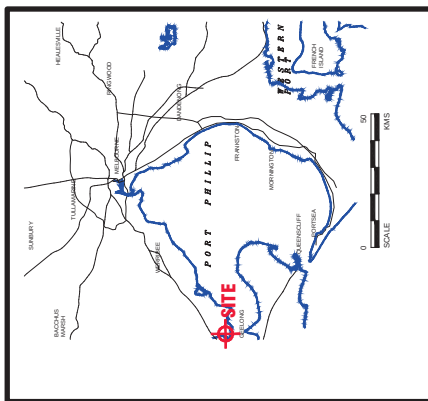
(b) Affiliate means:

- (i) A corporation owned beneficially or otherwise as to 50% of the voting shares by Mobil; or
- (ii) A related body corporate of Mobil or an affiliate, provided that the term "related body corporate" has the meaning ascribed in section 50 of the Corporations Act 2001 (C'th).

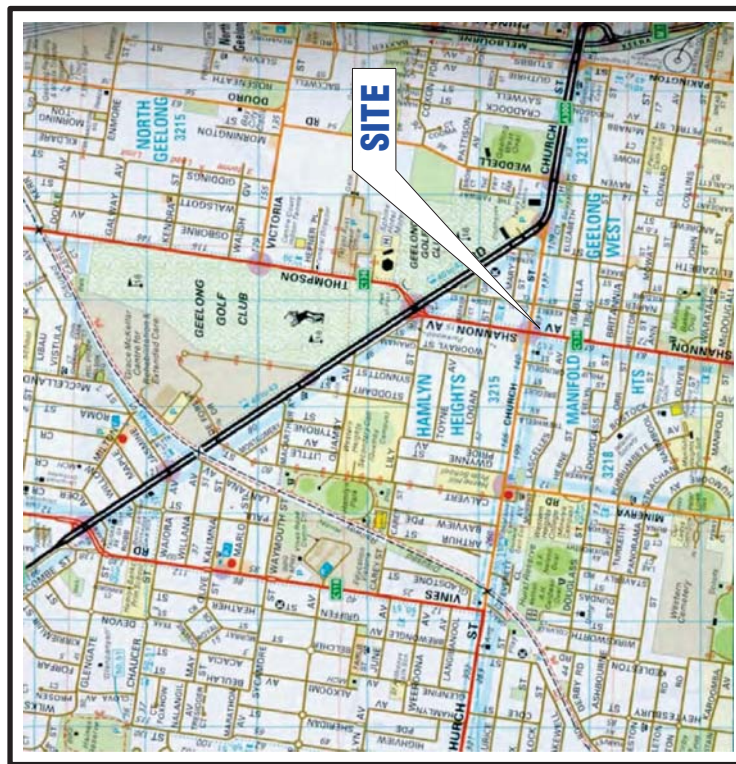
Appendix A

Figures

**Groundwater Quality Management Plan
Former Mobil Geelong West Service Station (VO0993)
151 Church Street, Geelong West, Victoria**



GENERAL AREA MAP



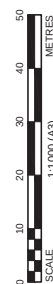
REGIONAL AREA MAP

SOURCE: GREATER MELBOURNE GEELONG WEST,
VICTORIA MAP REF: 441 11G EDITION 31st 2004



SOURCE: Nearmap.com, Hypertiles, 07/04/2011

LOCAL AREA MAP



GENERAL AREA LAND USE: COMMERCIAL & RESIDENTIAL

GENERAL HYDROGEOLOGY OF LOCALITY

1. **SOIL TYPE:** INTERBEDDED CALCAREOUS SEDIMENTS
2. **DEPTH TO AQUIFER:** ~7.96 - 9.32mBGS
3. **AQUIFER USAGE:** UNKNOWN

POTENTIALLY SENSITIVE RECEPTORS:

- CORIO BAY LOCATED 1.5km EAST
- HERNE HILL PRIMARY SCHOOL 500m WEST
- WESTERN HEIGHTS SECONDARY COLLEGE 500m NORTH WEST
- RESIDENTIAL PROPERTIES (SURROUNDING THE SITE)

LOCATION OF WATER BORES WITHIN 500m RADIUS:

NOTED 18 GROUNDWATER BORES WITHIN 1km RADIUS

1. **USAGE:** GROUNDWATER INVESTIGATION
2. **DEPTH TO SCREENED INTERVAL:** FOUR BORES (#142458, 142460, 142462, 142463) ARE SCREENED BETWEEN 4 to 12m
3. **DATE OF COMPLETION:** UNKNOWN

POTENTIAL OFFSITE SOURCES OF HYDROCARBON RELEASES WITHIN 100m RADIUS:

CALTEX SERVICE STATION TO THE WEST OF SITE ACROSS SHANNON AVENUE



coffey environments Pty Ltd

Rev	Date	Revision Details	Dm
A	18.04.12	GMP ISSUE APR 2012	CGT

coffey
environments
SPECIALISTS IN ENVIRONMENTAL
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Fax: (03) 9473 1450

Client:

MOBIL OIL AUSTRALIA PTY LTD

Project:

MOBIL GEELONG WEST (V00993)
GROUNDWATER MANAGEMENT PLAN

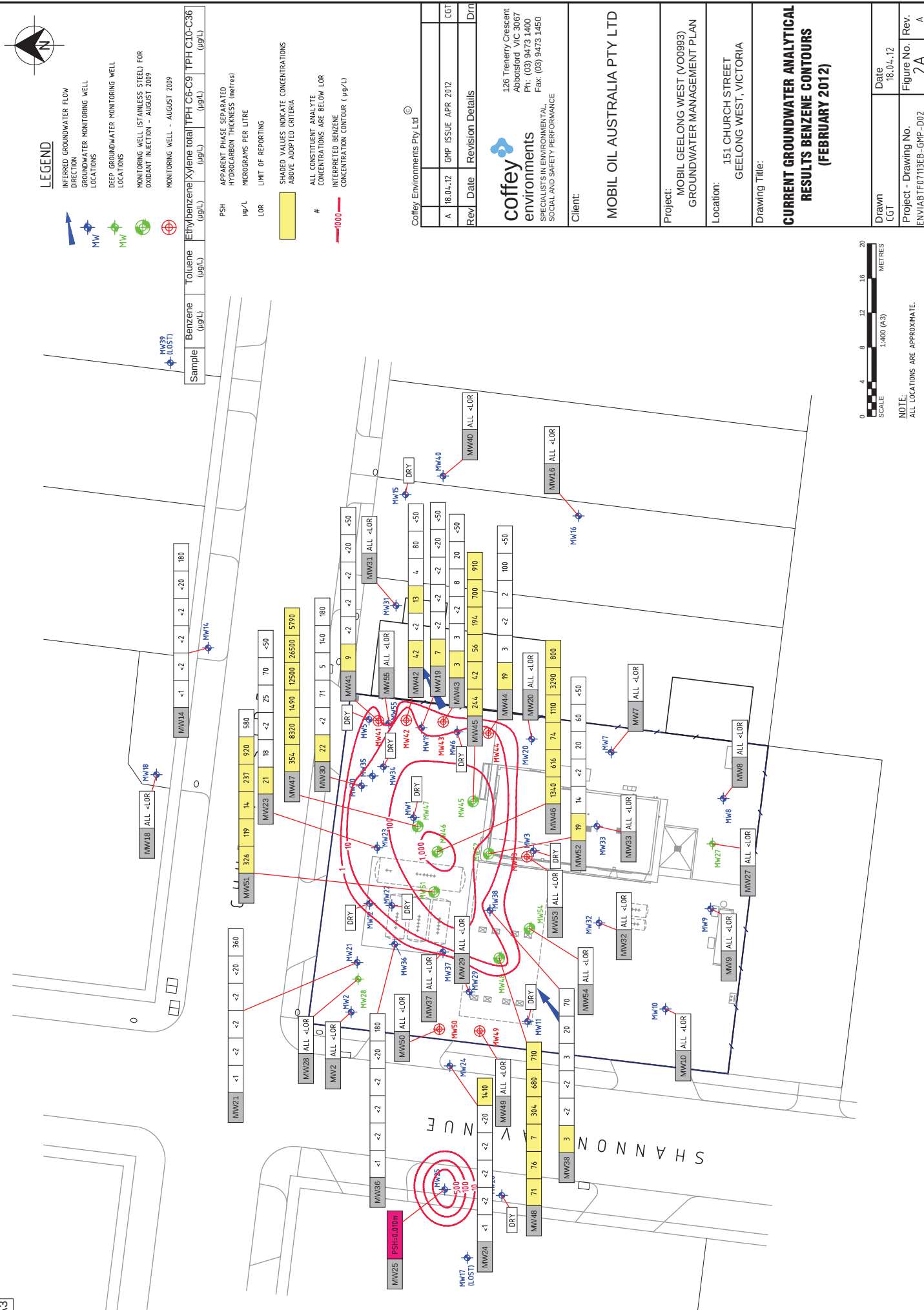
Location:

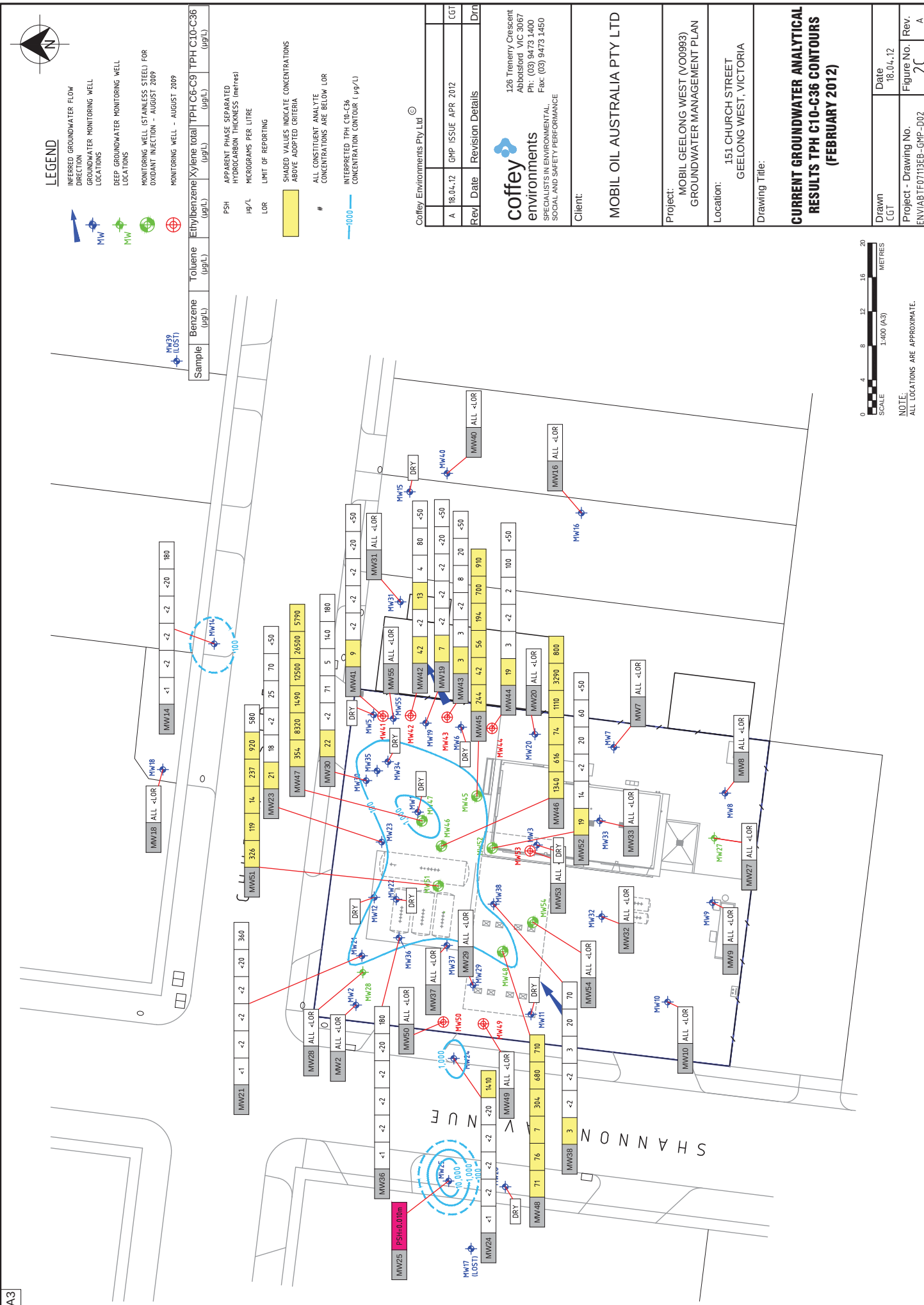
151 CHURCH STREET
GEELONG WEST, VICTORIA

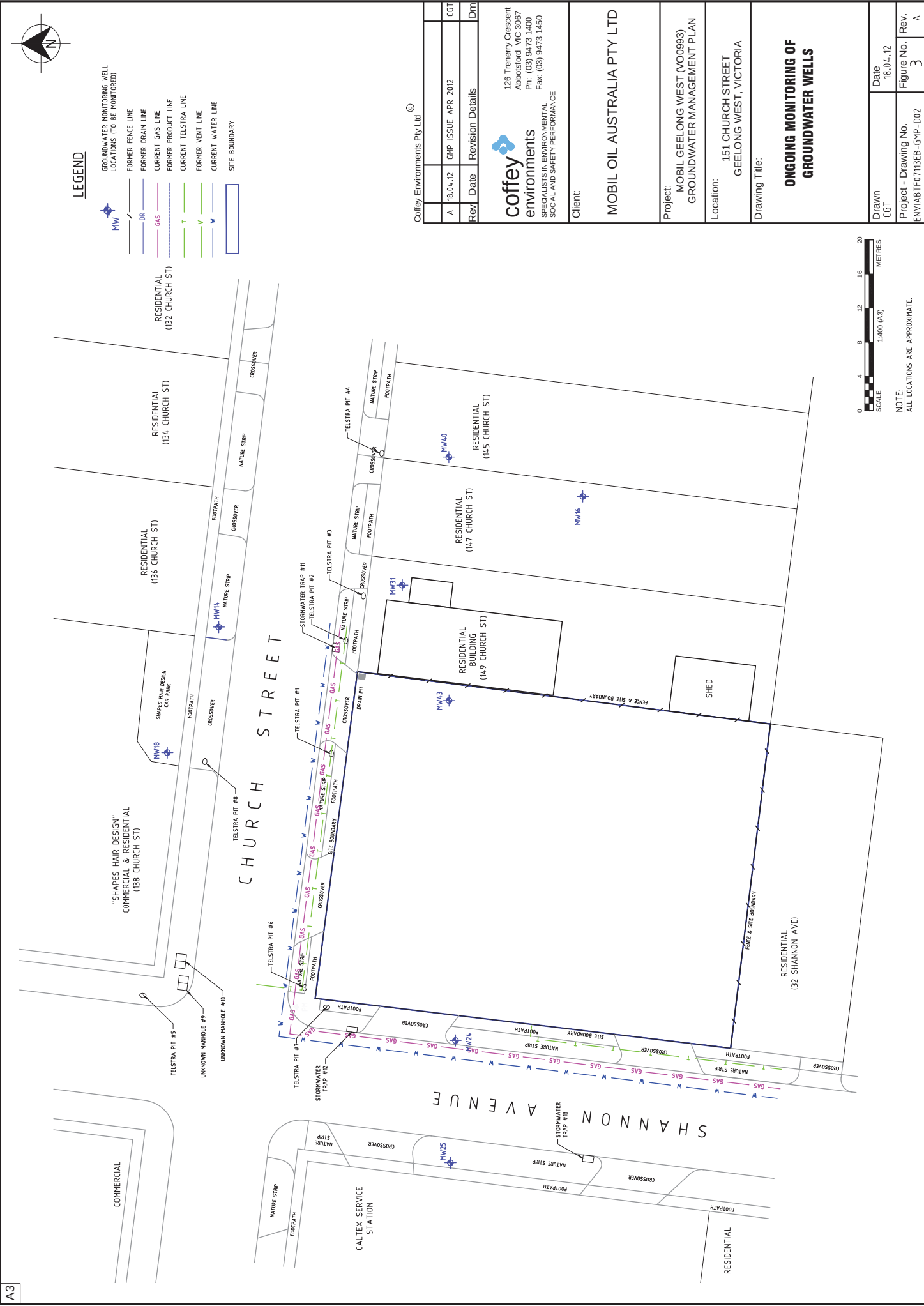
Drawing Title:

SITE LOCALITY PLAN
(FEBRUARY 2012)

Drawn	Date	Rev.
CGT	18.04.12	1
Project - Drawing No.	Figure No.	
ENVIABTF0713EB-GMP-002	1	A







EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

This is an environmental audit report for the former Mobil Service Station site at 151-153 Church Street, Geelong West, Victoria (corner of Shannon Avenue and Church Street), which has been completed by Mr. Steven Kirsanovs of Kirs Environmental Pty Ltd, in his capacity as an environmental auditor (contaminated land) appointed by the EPA pursuant to the *Environment Protection Act 1970*. The audit details and outcomes are summarised in Tables 1 and 2 on the following pages.

Table 1. Summary of audit information

EPA file reference no.	68842-1
Auditor	Steven Jon Kirsanovs
Auditor term of appointment	02/11/2011 to 25/11/2013
Name of person requesting certificate	Mr Stewart Frater (Mobil Oil Australia Pty Ltd)
Relationship to premises/location	Nominated representative for Mobil (previous site owner)
Date of request	10/01/2011
Date EPA notified of audit	11/01/2011
Completion date of the audit	21/12/2012
Reason for Audit	Voluntary
Current land use zoning	Residential 1
EPA Region	South West
Municipality	Greater Geelong
Dominant – Lot on plan	Lot 1 on Title Plan 382065X, Volume 8666 Folio 665
Additional – Lot on plan(s)	
Site/Premises Name	-
o Building / complex sub-unit No	-
o Street / Lot – Lower No	151
o Street / Lot – Upper No	153
o Street Name	Church
o Street type (road, court etc.)	Street
o Street suffix (North, south etc.)	-
o Suburb	Geelong West
o Postcode	3218
GIS Coordinate of Site centroid	(from Vic Land Channel interactive mapping tool)
Longitude / Northing (GDA 94)	5776299 N
Latitude / Easting (GDA 94)	266730 E
Site Area (hectares)	0.19
Members and categories of support team utilised	Jackie Wright (Health Risk Assessment)
Outcome of the audit	Statement of Environmental Audit
Further work or requirements	Refer to the Statement of Environmental Audit conditions. The main further works or requirements are as follows:- - o Vapour mitigation measures to be installed in any future buildings that include basements or cellars (except for buildings with basement areas that are not enclosed). - o Groundwater not to be extracted for stock watering, primary contact recreation, or industrial use. - o Ongoing groundwater monitoring required.

	o OH&S Plan required for future development that involves excavations greater than 2.5m depth.
Nature and extent of continuing risk	Potential unacceptable risks remain for the following scenarios:- - o Basements or cellars on site if not provided with vapour mitigation measures. - o Extraction and use of groundwater. - o Deep excavation works if not carried out in accordance with an OH&S Management Plan

Table 2. Physical Site Information

Site Aquifer Information	Tertiary Age sediments comprising Moorabool Viaduct Formation over Fyansford Formation / Batesford Limestone Formation
Average Depth to Groundwater	7-10m
Groundwater segment	C
Groundwater flow direction	North east
Past use/site history	Residential pre 1960's, service station 1960's to 1997, vacant since 1997.
Surrounding land use	North:- Commercial (hair dresser directly opposite and fitness centre north west) and residential properties. East:- Residential South:- Residential West:- Convenience store / retail fuel outlet and residential properties.
Proposed future use	Not known, but zoning (Residential 1) permits residential and commercial uses.