



NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017.

For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. NT001-0804

This site audit is a:

statutory audit

~~non-statutory audit~~

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name Dr Michael Dunbavan

Company Tetra Tech Coffey Pty Ltd

Address L19, Tower B, 799 Pacific Highway, Chatswood NSW

Postcode 2067

Phone (02) 9406 1206

Email Michael.dunbavan@tetrattech.com

Site details

Address 11 Bishop Street, Woolner NT

Postcode 0820

Property description

(Attach a separate list if several properties are included in the site audit.)

Lot 1829 Town of Darwin

Local government area City of Darwin

Area of site (include units, e.g. hectares) 0.278 hectares

Current zoning General Industry (GI)

Regulation and notification

To the best of my knowledge:

the site is the subject of a Notice to Carry Out Environmental Audit Program issued pursuant to Section 48(1) of the (NT) *Waste Management and Pollution Control Act 1998*.

~~the site is~~ the subject of a declaration, order, agreement, proposal or notice under the ~~Contaminated Land Management Act 1997~~ or the ~~Environmentally Hazardous Chemicals Act 1985~~, as follows: (provide the no. if applicable)

~~Declaration no.~~

~~Order no.~~

~~Proposal no.~~

~~Notice no.~~

~~the site is not~~ the subject of a declaration, order, proposal or notice under the ~~Contaminated Land Management Act 1997~~ or the ~~Environmentally Hazardous Chemicals Act 1985~~.

~~To the best of my knowledge:~~

~~the site has~~ been notified to the EPA under section 60 of the ~~Contaminated Land Management Act 1997~~

~~the site has not~~ been notified to the EPA under section 60 of the ~~Contaminated Land Management Act 1997~~.

Site audit commissioned by

Name Joseph Sullivan

Company Ensign Services (Aust.) Pty Ltd

Address 24 Leinster Grove, Northcote VIC

Postcode 3070

Phone 0413 150 596

Email joe.sullivan@linenau.com.au

Contact details for contact person (if different from above)

Name as above

Phone

Email

Nature of statutory requirements (not applicable for non-statutory audits)

~~Requirements under the Contaminated Land Management Act 1997
(e.g. management order; please specify, including date of issue)~~

~~Requirements imposed by an environmental planning instrument
(please specify, including date of issue)~~

~~Development consent requirements under the Environmental Planning and
Assessment Act 1979 (please specify consent authority and date of issue)~~

Requirements under other legislation (please specify, including date of issue)

Notice to Carry Out Environmental Audit Program issued pursuant to Section 48(1) of
the (NT) *Waste Management and Pollution Control Act 1998*.

Issue date: 22 / 07 / 2021

Purpose of site audit

~~A1 To determine land use suitability~~

~~Intended uses of the land:~~

~~OR~~

~~A2 To determine land use suitability subject to compliance with either an active or passive environmental management plan~~

~~Intended uses of the land:~~

OR

(Tick all that apply)

B1 To determine the nature and extent of contamination

~~B2 To determine the appropriateness of:~~

~~an investigation plan~~

~~a remediation plan~~

~~a management plan~~

~~B3 To determine the appropriateness of a site testing plan to determine if groundwater is safe and suitable for its intended use as required by the Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017~~

~~B4 To determine the compliance with an approved:~~

~~voluntary management proposal or~~

~~management order under the Contaminated Land Management Act 1997~~

~~B5 To determine if the land can be made suitable for a particular use (or uses) if the site is remediated or managed in accordance with a specified plan.~~

~~Intended uses of the land:~~

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

JBS&G (Australia) Pty Ltd

Titles of reports reviewed:

Detailed Site Investigation, 11 Bishop Street, Woolner, Northern Territory dated 31 March 2021 (reference 51237-111,766 R01 FINAL Rev2)

Targeted Early Works – On-site Groundwater Monitoring - 11 Bishop Street, Woolner, NT dated 22 July 2021 (reference R01-60941-LSA-Woolner-DRAFT_Rev A_220721)

Proposed Approach – NT EPA Notice response - 11 Bishop Street, Woolner, NT dated 14 September 2021 (reference L02-60941-LSA-Woolner-Work Plan-Draft-Rev A)

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Sampling, Analysis and Quality Plan, 11 Bishop Street, Woolner, Northern Territory dated 9 June 2022 (reference 60491-145,842 Rev B)

Groundwater and Vapour Monitoring Event, 11 Bishop Street, Woolner, Northern Territory dated 20 January 2022 (reference 60491,142,596 Rev 0)

Groundwater and Vapour Monitoring Event, 11 Bishop Street, Woolner, Northern Territory dated 17 November 2022 (reference 60491,147,762 Rev 0)

Other information reviewed, including previous site audit reports and statements relating to the site:

Site audit report details

Title Contamination Investigation for 11 Bishop Street, Woolner NT – Environmental Audit Report

Report no. SYDEN292019-R02

Date 22 June 2023

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section. (Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
 - (B1) the nature and extent of contamination, and/or
 - (B2) the appropriateness of an investigation, remediation or management plan¹, and/or
 - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
 - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
 - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

¹ For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

Section A1

I certify that, in my opinion:

The **site is suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

- Residential, including substantial vegetable garden and poultry
- Residential, including substantial vegetable garden, excluding poultry
- Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry
- Day care centre, preschool, primary school
- Residential with minimal opportunity for soil access, including units
- Secondary school
- Park, recreational open space, playing field
- Commercial/industrial
- Other (please specify):

OR

- I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.

Overall comments:

Section A2

I certify that, in my opinion:

Subject to compliance with the **attached** environmental management plan² (EMP), the site is suitable for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

- Residential, including substantial vegetable garden and poultry
 - Residential, including substantial vegetable garden, excluding poultry
 - Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry
 - Day care centre, preschool, primary school
 - Residential with minimal opportunity for soil access, including units
 - Secondary school
 - Park, recreational open space, playing field
 - Commercial/industrial
 - Other (please specify):
-

EMP details

Title

Author

Date

No. of pages

EMP summary

This EMP (attached) is required to be implemented to address residual contamination on the site.

The EMP: (Tick appropriate box and strike out the other option.)

- requires operation and/or maintenance of **active** control systems³
- requires maintenance of **passive** control systems only³.

² Refer to Part IV for an explanation of an environmental management plan.

³ Refer to Part IV for definitions of active and passive control systems.

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Purpose of the EMP:

Description of the nature of the residual contamination:

Summary of the actions required by the EMP:

How the EMP can reasonably be made to be legally enforceable:

How there will be appropriate public notification:

Overall comments:

Section B

Purpose of the plan⁴ which is the subject of this audit:

To evaluate the types, amount, distribution and mobility of contaminants and wastes present in the environment as defined in Attachment A to the Notice issued by NT EPA.

I certify that, in my opinion:

(B1)

- The nature and extent of the contamination **has** been appropriately determined
- ~~The nature and extent of the contamination **has not** been appropriately determined~~

~~AND/OR (B2)~~

- ~~The investigation, remediation or management plan **is** appropriate for the purpose stated above~~
- ~~The investigation, remediation or management plan **is not** appropriate for the purpose stated above~~

~~AND/OR (B3)~~

- ~~The site testing plan:~~
- ~~**is** appropriate to determine~~
- ~~**is not** appropriate to determine~~
- ~~if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*~~

~~AND/OR (B4)~~

- ~~The terms of the approved voluntary management proposal* or management order** (strike out as appropriate):~~
- ~~**have** been complied with~~
- ~~**have not** been complied with.~~
- ~~*voluntary management proposal no: _____~~
- ~~**management order no: _____~~
-

~~AND/OR (B5)~~

- ~~The site **can be made suitable** for the following uses:~~
- ~~(Tick all appropriate uses and strike out those not applicable.)~~
- ~~Residential, including substantial vegetable garden and poultry~~

⁴ For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

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- ~~Residential, including substantial vegetable garden, excluding poultry~~
- ~~Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~
- ~~Day care centre, preschool, primary school~~
- ~~Residential with minimal opportunity for soil access, including units~~
- ~~Secondary school~~
- ~~Park, recreational open space, playing field~~
- ~~Commercial/industrial~~
- ~~Other (please specify):~~

~~IF the site is remediated/managed* in accordance with the following plan (attached):~~

~~*Strike out as appropriate~~

~~Plan title~~

~~Plan author~~

~~Plan date~~

~~No. of pages~~

~~SUBJECT to compliance with the following condition(s):~~

Overall comments:

Based on my review of relevant contamination assessment reports, two types of contaminants were identified at the site. The first is tetrachloroethene (PCE) which was used historically as the solvent for dry-cleaning. This solvent has been replaced by non-chlorinated solvents (Solvon K4 and HC 2000) which were absent in recent groundwater samples collected at the site. The second type of contaminant is petroleum hydrocarbon (diesel and heavy oil) used historically as a heating source. The former underground storage tank for liquid fuel has been removed and residual contamination in the vicinity of the tank pit poses a low risk to the environment. Current fuel supply is from LNG which stored in three above-ground tanks at the Bishop Street end of the site.

PCE impacted soil and groundwater on the site from unintended leakage of PCE residues in surplus drums related to the supply of PCE. The monsoonal climate of Darwin meant that the wet season included heavy rainfall events during which infiltrating rainwater dissolved PCE and the impacted groundwater seeped down into the shallow aquifer. This process continued for many years generating a plume of PCE impacted groundwater which extended to the northwest (off-site) and southeast (on-site) to cover an estimated 3,500m² currently. The rate

of spread of impacted groundwater is expected to be matched by dispersion and natural mixing with groundwater in a fractured sandstone layer at the base of the Darwin Formation.

Natural dichlorination of PCE generated TCE with additional dichlorination possible, but not being effective for site conditions. The mass of PCE and TCE dissolved in the shallow aquifer is conservatively estimated to be 1kg. PCE has been replaced as a dry cleaning solvent.

Concentrations of PCE in soil vapour in the subsurface at 9 and 11 Bishop Street have the potential to pose an unacceptable human health risk, however measurements of indoor air quality demonstrate that intrusion of PCE vapour into indoor air is not occurring other than at very low concentrations well below health investigation levels. For the current general industrial use of the land, the presence of PCE and TCE impacted groundwater in the shallow aquifer does not appear to be detrimental.

Concentrations of PCE and TCE in shallow groundwater and soil vapour appear to be slowly reducing through natural processes. Given that use of PCE on the site has been discontinued and no potential source of that chemical remains on site (other than the low mass that is already in the subsurface), the potential environmental risk posed by that contamination is also expected to reduce over time and continued general industrial use of the land.

Based on information published on PFAS contamination at RAAF Base Darwin, supported by site details described in the Environmental Audit Report, I conclude that:

- * No material source of PFAS has been identified on or immediately adjacent to the site;
 - * A comparison of concentrations of PFOS, PFHxS and PFOA in groundwater sampled from the site and the Base indicate no direct connection between groundwater at the site and in the southwest part of the Base;
 - * PFOS concentrations in groundwater at the site are not more than 2 times the guideline for 95% species protection (0.13 µg/L) and are well below the guideline value for 90% species protection (2 µg/L); and PFOA concentrations are 3 orders of magnitude lower than the guideline value for 95% species protection; and
 - * The environmental and topographic setting between the site and RAAF Base Darwin is not conducive to migration of PFAS impacted groundwater from the Base through the site.
-

I note that a caretaker's residence is permissible on a property zoned General Industrial. I recommend that any such structure be founded on piers (or similar) to provide an air gap between the ground and the floor of the residence. This arrangement is common for installation of prefabricated huts typically used for such purposes.

Provided that properties known as 9 Bishop Street and 11 Bishop Street are used for activities consistent with general industrial use (noting my recommendation for a possible caretaker's residence) and that concentrations of PCE and TCE (combined) in the shallow groundwater are steady or decreasing, I have no other recommendation for clean-up and/or management works.

Part III: Auditor's declaration

I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997*.

Accreditation no. 0804 (New South Wales)

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997*, and
- with due regard to relevant laws and guidelines of the Northern Territory, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the NSW *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.



Signed

Date 29 June 2023

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of the *Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**:
nswauditors@epa.nsw.gov.au or as specified by the EPA
- AND
- the **local council** for the land which is the subject of the audit.