Sampling and Analytical Quality Plan

1 Sirius Road, Lane Cove West, NSW

Confidential Privileged Communication

Prepared for:
Greenbox Architecture
Level 25, 25 Bligh Street
Sydney, NSW, 2000

25 October 2018

Distribution

Sampling and Analytical Quality Plan,
Sirius Road, Lane Cove West, NSW

25 October 2018

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Senversa Pty Ltd

ABN: 89 132 231 380

Level 5, The Grafton Bond Building, 201 Kent St, Sydney NSW 2000

tel: + 61 2 8252 0000; fax: + 61 3 9606 0074

www.senversa.com.au

Primary Author	**Roxanne McKinnon** Environmental Scientist	**Project Manager**	**Roxanne McKinnon** Environmental Scientist
Technical Peer Review	**Ian Batterley** Principal	**Project Director**	**Jason Clay** Senior Principal

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List of Acronyms

Acronym	Definition
ACM	Asbestos Containing Material
MHD	Australian Height Datum
AS	Australian Standard
ANZECC	Australian and New Zealand Environment and Conservation Council
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
COC	Chain of Custody
CoPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DO	Dissolved Oxygen
DQOs	Data Quality Objectives
DQIs	Data Quality Indicators
EC	Electrical Conductivity
EIL	Ecologically-Based Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
GME	Groundwater Monitoring Event
HIL	Health-Based Investigation Level
HSL	Health Screening Level
LFG	Landfill Gas
LOR	Limit of Reporting
m	Metre
m^3	Cubic Metres
m AHD	Metres Australian Height Datum
m bgl	Metres Below Ground Level
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
MW	Monitoring Well
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council

Acronym	Definition
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PFAS	Per and Polyfluoroalkyl Substances
PID	Photo-Ionisation Detector
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analytical Quality Plan
SPOCAS	Suspension Peroxide Oxidation – Combined Acidity and Sulphate
SVOC	Semi-Volatile Organic Compound
SWL	Standing Water Level
TRH	Total Recoverable Hydrocarbons
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Litre
VOC	Volatile Organic Compound

1.0 Introduction

1.1 Background and Proposed Development

Senversa Pty ltd (Senversa) was engaged by Greenbox Architecture (Greenbox) on behalf of AirTrunk Pty Ltd (AirTrunk) to prepare a Sampling and Analysis Quality Plan (SAQP) for a Phase 2 Acquisition Environmental Due Diligence Assessment (Phase 2) for 1 Sirius Road, Lane Cove West, NSW (the 'site').

This SAQP describes the Data Quality Objectives (DQOs) and required investigation methodology for undertaking the Phase 2 including sampling, analytical and reporting requirements.

The site location is shown on **Figure 1,** the current layout is shown on **Figure 2** and the proposed sampling locations on **Figure 3.**

1.2 Background

It is the understanding of Senversa's that Greenbox is undertaking planning for redevelopment of the site for the development of a data centre.

Senversa completed a Phase 1 Acquisition Environmental Due Diligence Assessment (Phase 1) to refine the current understanding of the site and aid Greenbox / AirTrunk in assessing potential liabilities associated with site contamination.

The Phase 1 identified the following potential sources of contamination:

- historical landfilling of the site with uncontrolled fill of unknown origin;
- potential burial of drums and other waste materials;
- potentially impacted stockpiled materials of unknown origin; and
- potentially contaminating activities from surrounding industrial land use.

The NSW EPA placed a number of constraints on the site within the Notice Maintaining Remediation (No.28027, 27 September 2005). These included:

- "*The Environment Protection Authority… requires the recipient to maintain the following remediation actions in relation to the land:*
    - *a) The recipient must obtain the prior written approval of the EPA to any works that are to be carried out on the land, whether or not the works are carried out by the recipient, for the purposes of:*
        - *i. covering, dispersing or reducing the contamination of the land; or*
        - *ii. restoring or rehabilitating the land; or*
        - *iii. removing or disposing of any soil, sand, rock, water, or any other solid or liquid material of any kind from the land; and*
    - *b) the recipient must maintain the land in a manner that maintains the integrity and impermeability of the clay capping which is on the land, including selection of vegetation with root systems that do not grow into the clay capping layer; and*
    - *c) the recipient must not undertake any work, or cause, permit or allow the undertaking of any work which would result in any disturbance to, or modification of the clay capping layer unless the prior written approval of the undertaking has been obtained from the EPA and the work is undertaken in accordance with any conditions of that approval."*
- *Failure to comply with these conditions would be an offence.*
- *Pursuant to action (b) of the above, the site appears to have been clay capped at some point in the past. The extent, integrity and details of the cap are unknown.*"

Also "*At least 30 days prior to the recipient selling, transferring, leasing or otherwise relinquishing ownership or occupation of the land or any part of the land, the recipient must give written notification of this to the EPA and of the name and contract details of the prospective owner or occupier.*"

1.3 Project Objectives

This objectives of this SAQP are to define the Data Quality Objectives (DQOs) and required methodology for undertaking the Phase 2, including sampling, analytical and reporting requirements.

The overall objectives of the Phase 2 will be to assess the potential distribution / extent of contamination in soil and groundwater identified on-site within the Senversa (2018) Phase 1.

The investigation will also aim to provide preliminary estimates of fill volumes within the site and associated approximate costings for offsite disposal requirements.

1.4 Regulatory Requirements

This SAQP has been developed in accordance with relevant elements of the following guidelines and standards:

- ANZAST (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
- Australian Standard (2005). *AS 4482.1 2005, Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 2: Non-volatile and Semi-volatile compounds*.
- Australian Standard (1999). *AS 4482.2 1999, Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances*.
- National Health and Medical Research Council (2011). *Australian Drinking Water Guidelines ADWG* [updated August 2018].
- Heads of Environment Protection Authority (2018). *PFAS National Environmental Management Plan.* This is hereafter referred to as 'the NEMP, 2018'.
- National Environment Protection Council (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1).* This is hereafter referred to as 'the NEPM, 2013'.
- National Health and Medical Research Council/National Resource Management Ministerial Council, Commonwealth of Australia, Canberra (2011). *Australian drinking water guidelines paper 6 national water quality management strategy.*
- NSW Environment Protection Authority (1995). *Sampling Design Guidelines*.
- NSW Environment Protection Authority (2017). *Guidelines for the NSW Site Auditor Scheme (3rd edition)*.
- NSW Office of Environment and Heritage (2011). *Guidelines for Consultants Reporting on Contaminated Sites*.
- WA Department of Health (2009). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.*

2.0 Site Background

2.1 Site Identification

The site identification information is presented within **Table 2-1**:

Table 2-1: Site Information

Item	Description
Site Address	1 Sirius Road, Lane Cove West, NSW
Legal Description	Lot 1 in DP 1551370
Site Area	Approximately 4.0 hectares
Site Elevation (m AHD)	Ranging between approximately 2 - 34 m AHD
Site Location	**Figure 1**
Site Layout	**Figure 2**

2.2 Environmental Site Setting

A detailed description of the site setting is provided within **Section 3.0** of the Senversa Phase 1 (Senversa, 2018) and a summary is presented below.

A review of geological / soil landscape databases indicates the site is situated on Triassic Hawkesbury Sandstone of the Mesozoic era. It is described as medium to coarse grained quartz sandstone with very minor shale and laminate lenses. Previous investigations undertaken within the site identified lithology within the site to be generally comprised of shallow fill materials overlying shale/siltstone and weathered sandstone.

While groundwater was not encountered during previous investigations, based on information reviewed as part of the Senversa 2018 Phase 1, Senversa considers that groundwater is likely to be present at the soil / bedrock interface or within underlying fractured bedrock.

No surface water was observed onsite. However, Lane Cove River and Stringybark Creek are located immediately adjacent the site to the west and north respectively (see **Figure 2**).

At the time of the Phase 1 the land uses surrounding the site were as follows:

- **North:** Pumphouse Lane Cove bushwalk, and adjacent bushland is located on the northern boundary of the site followed by Stringybark Creek (a tributary to the Lane Cove River) runs parallel to the northern boundary of the site. A Meriton hotel is located approximately 400 m north of the site followed by Epping Road then low-density residential dwellings and commercial / industrial office park facilities.
- **East:** Sirius Road is located on the eastern boundary of the site followed by commercial industrial development (Symbio Laboratories Sydney, Plastic Tooling Manufacturing, Alto Hyundai Service Centre, Concise Bodyworks, HMA POGC Sensor Technology and SC Johnson & Sons Pty Ltd) then low density residential / undeveloped bushland.
- **South:** the southwest of the site bordering the Lane Cove River is undeveloped bushland. Directly south and to the southeast industrial use (Kanes Hire Pty Ltd, Definitive Car Detailing, Road Runner Mobile Tyres, Combined Towing Services NSW and Ausgrid Lane Cove).
- **West:** bushland and the Lane Cove River borders the site to the west. Beyond this is the Boobajool Reserve, Gwandalan Reserve and Magdala Park.

2.3 Summary of Previous Investigations

In developing this SAQP, Senversa reviewed information presented in the following previous investigation:

- Senversa (2018), Phase 1 Acquisition Environmental Due Diligence Assessment, Sirius Road, Lane Cove West, NSW, 18 October 2018 (Senversa 2018).

A summary of Senversa 2018 is provided below.

Senversa (2018)

Senversa prepared a Phase 1 Acquisition Environmental Due Diligence Assessment (Phase 1) to assess potential constraints / liabilities associated with site contamination that require consideration during re-development of the site as a data centre.

In developing in the Phase 1 investigation Senversa reviewed information presented in the following previous investigations:

- NSW EPA Notice Maintaining Remediation (No.28027, 27 September 2005) (NSW EPA 2005).
- Environmental Investigations Australia (EIA) 2006, Environmental Site Assessment, 1 Sirius Road, Lane Cove, NSW, 3 July 2006. (EIA 2006).
- EIA (2007), Remedial Action Plan, 1 Sirius Road, Lane Cove, NSW, 31 January 2007. (EIA 2007).

Senversa notes that the following previous investigations have been undertaken within the site but at the time of this report have not been provided to Senversa, as such Senversa relied on information summarised within EIA 2006 and EIA 2007.

- Dames and Moore (1991) Letter report Geotechnical Investigation, Lane Cove Site D&M Ref NKN-dsk3.
- Golden Mackay Pty Ltd (1991) Land at Lane Cove Historical and Archaeological Assessment (April 1991).
- Dames and Moore (1991) Environmental Survey, Lane Cove Substation for Electricity Commission of NSW D&M Ref 13503-027-70.
- Dames and Moore (1993) Additional Sampling and Biota Sampling, Sirius Road, Lane Cove for Pacific Power.
- Pacific Power Services (1994) Remediation of Lot 1, Sirius Road, Lane Cove – Technical Specifications of Proposed Works.
- Pacific Power International – Environmental Services (August 1999) Lane Cove Site: Assessment of Iron Satin Seepage from Contaminated Area (August 1999).
- Dames and Moore (2000) Letter Report, Additional Testing to Assess Risk of Harm, Lot 1 Sirius Road D&M Ref 13503-042-371.

A summary of these previous investigations is presented within **Section 3.2.10** of Senversa (2018). The investigation identified a number of potentially complete pollutant linkages at the site resulting from:

- historical landfilling of the site with uncontrolled fill of unknown origin;
- potential burial of drums and other waste materials;
- potentially impacted stockpiled materials of unknown origin; and
- potentially contaminating activities from surrounding industrial land use.

Based on the information reviewed as part of the Phase 1 Investigation, it was recommended that additional investigation should be undertaken to assess the contamination status of the site and further inform potential liabilities/constraints associated with site contamination that may impact the proposed development.

It is also noted that prior to the commencement of any intrusive works within the portion of the site subject to the NSW EPA maintenance order, approval from EPA will be required prior to any disturbance of the capping layer.

3.0 Preliminary Conceptual Site Model

3.1 Potential Sources of Contamination

Senversa (2018) identified the following Contaminants of Potential Concern (CoPC) associated with current and historical land uses undertake within the site and surrounding areas:

	Potential Source	Contaminants of Potential Concern
On-Site	• Potential Source 1 – Historical site uses / Fill material of unknown origin, including buried drums, acid containers etc.	• Acid Sulphate Soils (ASS), asbestos, organochlorine and organophosphorus pesticides (OCP / OPP), total recoverable hydrocarbons (TRH); semi / volatile organic compounds (SVOC / VOC), chlorinated solvents (trichloroethene (TCE) and tetrachloroethene (PCE)), benzene, toluene, ethylbenzene and xylenes (BTEX); heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), nutrients, phthalates and per and polyfluoroalkyl substances (PFAS). Landfill gas (predominantly methane and carbon dioxide).
	• Potential Source 2 – Stockpiled soil of unknown origin.	• TRH, BTEX, PAH, PCBs, OCP / OPP heavy metals and asbestos.
Off-Site	• Potential Source 3: Current and historical surrounding commercial / industrial land uses	• ASS, PFAS, PCBs, TRH, BTEX, VOCs, heavy metals and pesticides (OCP / OPP).

3.2 Potential Pathways

The primary potential exposure pathways of concern at the site are:

- Inhalation of vapour (from soil and/or groundwater) and contaminated dust (from soils).
- Dermal contact and/or incidental ingestion with contaminated soils.
- Transport of contamination through surface water flows.
- Transport of contamination to underlying groundwater aquifers.
- Transport of contaminants through mechanical transport.

3.3 Potential Receptors

Key receptors have been identified as:

- Future site users.
- Workers carrying out the development of the site (short term).
- Groundwater beneath the site.
- Adjacent sensitive receptors e.g. Lane Cove River and Stringybark Creek.

4.0 Data Quality Objectives

Based on the results of previous investigations (Senversa, 2018) and with reference to the CSM outlined above Senversa developed the following data quality objectives for this investigation.

The Data Quality Objectives (DQOs) for this SAQP have been developed in accordance with the NEPM, 2013 and the Australian Standard AS4482.1 *Guide to the Sampling and Investigation of Potentially Contaminated Soil*.

4.1 Step 1 – State the Problem

The Senversa (2018) Phase 1 identified a range of potentially contaminating historical land uses / activities at the site and surrounding area, as such Greenbox / AirTrunk requires a Phase 2 to be undertaken to assess the potential for widespread contamination to be present at the site to identify any potential limitations to the proposed development.

The Phase 2 will also aim to provide preliminary estimates of fill volumes within the site and associated approximate costs for potential offsite disposal.

4.2 Step 2 – Identify the Decisions

Based the objectives of this Phase 2 the decisions required to meet the objectives are discussed below:

- Are there any potential unacceptable risks to human health and / or ecological receptors from contaminants in fill / soil / landfill gas and / or groundwater?
- Is there any evidence of, or potential for, migration of contaminants from the site?
- Is there any evidence of, or potential for, off-site migration of contaminants to the site?
- Is there sufficient information on the distribution and characteristics of contaminated media across the site to evaluate risk of harm to human health or the environment and whether off-site migration of contamination may have occurred?
- Is there enough information to form an estimation of fill material volumes?
- Is management or remediation of contamination, if identified, required?
- Is there sufficient information on the distribution and characteristics of contaminated media across the site to develop a Remediation Action Plan or Site Management Plan to (where necessary) remediate and / or manage site contamination?

4.3 Step 3 – Identify Information Inputs

The inputs to make the above decisions include:

- Information obtained during review of previous investigations.
- Information relating to the environmental setting of the site and surrounding area obtained during preparation of the Senversa (2018) Phase 1.
- Field observations made during intrusive investigation works.
- Laboratory analytical data of collected soil, soil vapour and groundwater samples.
- Field measurements collected during intrusive investigation and groundwater monitoring rounds.
- Screening-level assessment criteria from guidelines made or approved by the NSW EPA.

4.4 Step 4 – Define the Study Boundaries

The boundaries of the investigation are identified as follows:

- Spatial boundaries – the investigation is limited to the site boundaries as illustrated within Figure 1 and the maximum depth of investigation at each location detailed within section 5.0 of this SAQP.
- Temporal boundaries – the temporal boundary is limited to the data collected during these investigation works. As such, seasonality will not be assessed at this stage.
- Constraints within the study boundaries – the following are limitations of the sampling strategy for the site requiring consideration:
    - NSW EPA maintenance order requirements relating to disturbance of the capping layer etc.
    - Access restrictions associated with site topography and vegetation.
    - Possible presence of underground utilities.
    - Presence of heterogeneous material that may require specific sampling methods.
    - Presence of potential contaminants outside of the identified area of environmental concern.

Proposed sample locations have been selected taking into consideration the above factors.

4.5 Step 5 – Develop the Decision Rules

The decision rules adopted for this investigation are included in the **Table 4-5**.

Table 4-5: Decision Rules

Decision Required to be Made	Decision Rule
Are the data sufficient to address the objectives of the investigation?	• Do the collected data indicate the potential for significant and widespread contamination arising from key potential sources identified within **Section 3** and subject to this investigation? • Do field observations (including visual, olfactory, presence of anthropogenic materials in fill) indicate potential significant contamination at the investigation locations? • Do results of landfill gas screening indicate an unacceptable risk from landfill gases or the requirement for further quantitative assessment. • Do analytical data exceed adopted screening-level assessment criteria? • Is there sufficient information to estimate the volume of fill material contained onsite? • Have any additional areas of potential environmental concern been identified within investigations works?
Are the data generated by sampling and analysis of an acceptable quality?	• Have the data collected been subjected to an assessment of quality assurance/quality control and found to be suitable for use in this assessment?
Does the site contain soil/groundwater and/or soil vapour impacted by contamination resulting from historical land uses?	• Collected soil; groundwater; and soil vapour samples are to be analysed for CoPCs associated with current and historical land uses practices and results compared to relevant NSW EPA endorsed regulatory guideline criteria.
Is there evidence of significant widespread contamination?	• Collection of soil; groundwater; and soil vapour samples during site investigation works.
Is additional information required to determine the potential liabilities/constraints associated with the proposed development?	• If it is determined that additional information is required to further reduce the uncertainties associated with the distribution and characterisation of soil/groundwater and/or soil vapour contamination, then appropriate recommendations for further assessment and/or investigation (including for assessment of potential risks) will be provided.

4.6 Step 6 – Specify Limits of Decision Error

This step establishes the decision maker's tolerable limits on decision errors, which provide performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NEPM, 2013, appropriate data quality indicators (DQIs) used to assess data quality assurance / quality control (QA / QC) and standard Senversa procedures for field sampling and sample handling.

To assess the usability of the data prior to making decisions, the data will be assessed against pre-determined DQIs for precision, accuracy, representativeness, comparability and completeness.

The pre-determined DQIs established for the project are discussed below in relation to precision, accuracy, representativeness, comparability, completeness and sensitivity.

- **Precision** – measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- **Accuracy** – measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this project is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** – expresses the degree with which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** – expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in sampling techniques, analytical techniques and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- **Sensitivity** – expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted assessment criteria.

If any of the DQIs are not met, further assessment will be necessary to assess whether the non-conformance will significantly affect the usefulness of the data. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of the data. DQIs are provided in **Table 4-6** below.

Table 4-6: Data Quality Indicators

Data Quality Objectives	Frequency	Data Quality Indicator
Precision		
Blind duplicates (intra laboratory)	1/20 samples (or 1/10 for Per- and poly-fluoroalkyl substances (PFAS))	<30% RPD where result is >10 times LOR
Blind duplicates (inter laboratory)	1/20 samples (or 1/10 for PFAS)	<30% RPD where result is >10 times LOR
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%
Matrix spikes	1 per lab batch	70-130%

Data Quality Objectives	Frequency	Data Quality Indicator
		Lower recoveries may be acceptable for OCPs, OPPs, PCBs and phenols and will be assessed according to USEPA protocols.
Representativeness		
Sampling appropriate for media and analytes	NA	NA
Samples extracted and analysed within holding times.	NA	organics (14 days), inorganics (6 months)
Rinsate blank	1 per day where non-dedicated equipment is used. Samples are to be analysed for all CoPCs other than asbestos.	<LOR
Trip spike	1 per lab batch (BTEX only)	70-130%
Method blank / field blank	1 per lab batch	<LOR
Comparability		
Senversa standard operating procedures for sample collection & handling	All samples	All samples
NATA* accredited analytical methods used for all analyses	All samples	All samples
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples
Completeness		
Sample description and Chain of Custodies completed and appropriate	All samples	All samples
Appropriate documentation	All samples	All samples
Satisfactory frequency and result for QC samples	All QA / QC samples	-
Data from critical samples is considered valid	NA	Critical samples valid
Sensitivity		
Limits of reporting appropriate and consistent	All samples	All samples

*National Association of Testing Authorities

4.7 Step 7 Optimise the Design for Obtaining Data

Various strategies for developing a statistically based sampling plan are identified in the NEPM 2013 and NSW EPA (1995), including judgemental; random; systematic and stratified sampling patterns.

Based on historical land uses (refer to **Section 2.0**), a systematic and targeted sampling program was developed to characterise the potential sources of contamination within the site.

The sampling rationale strategy adopted are described in **Table 4-7** below and sample locations are presented on **Figure 3**.

Table 4-7: Sample Location Rationale

Media	Sample Location	Sampling Rationale
Soil	• Test-Pits	The purpose of test-pit sampling is to visually assess the potential composition and extent of fill materials beneath the site and to enable sample collection for subsequent waste classification purposes. To characterise the extent of fill material within the Site, visual observations will be recorded for all excavated test pits with soil samples to be obtained from a total of 10 test pits for waste classification. 20 test-pit locations are proposed to implement both a systematic and targeted approach of the site to assess the potential sources of contamination identified in **Table 3-1.** 10 test pits will be excavated within the former fill area and 10 test pits will be excavated throughout the general site area. Arisings will be replaced in the order in which they were excavated, any clay cap material will be replaced and compacted at the site surface.
	• Soil Bores	Soil samples will be obtained from soil bores (MW01- MW05), which will be converted to the monitoring wells, the locations of which are discussed below.
	• Stockpile Samples	As the material in each stockpile onsite appears to have been segregated by material type (fill, clay and two crushed rock types), Senversa proposes to collect five representative samples from each of the four material types be collected to assess the potential composition and provide general stockpile characterisation.
	• Surface Samples	Senversa will collect five samples from imported crushed concrete materials utilised for construction for access driveways within the site.
Groundwater	Groundwater Monitoring Well	Groundwater monitoring wells will be installed in the site as per the following: • MW01: inferred up gradient of the site; • MW02 and MW03: through the centre of the site / within the capped area; and • MW04 and MW05: inferred down gradient of the site.
Soil Vapour	Landfill Gas Monitoring.	To assess potential landfill gas arising from the onsite fill materials, monitoring wells installed within the site are to be utilised as a combined groundwater and landfill gas wells.

5.0 Investigation Methodology

5.1 Fieldwork Methodology

5.1.1 Methodology Outline

Table 5-1 below summarises the methodologies to be adopted for the Phase 2 assessment. Details of QA / QC procedures are provided in **Table 5-2**.

Table 5-1: Field Investigation Methodologies

Task	Proposed Scope
1. Preliminaries	Senversa will prepare a site-specific Health and Safety Management Plan prior to conducting field works. • The plan will include a job safety analysis and safe work method statements for the works to be conducted. • The Senversa field team will include staff that have completed first aid training and be appropriately trained and experienced to work on potentially contaminated sites. Prior to the commencement of works. A site inspection will be undertaken to confirm site conditions are consistent with those presented within Senversa (2018) Phase 1 ESA and mark out proposed sampling locations.
2. Service Location	Prior to the commencement of intrusive works, the proposed investigation locations will be cleared via an experienced underground utility locator with radio detection equipment. A review of available service plans, including Dial Before You Dig and Greenbox / AirTrunk supplied site plans, will also be completed.
3. Stockpile and Surface Material Sampling	As material within stockpiled onsite appears to have been segregated by material type (fill, clay and two crushed rock types), five samples from each of the four material types will be collected (20 primary samples and two QA/QC samples) to assess the potential composition and provide general stockpile characterisation. Senversa will collect five samples from imported crushed concrete materials utilised for construction for access driveways within the site.
4. Excavation of Test Pits	20 test pits will be excavated via a backhoe / excavator to assess the extent of fill material to a maximum depth 3.0 m bgl throughout the site. • The test pits will be excavated to visually assess the potential composition and extent of fill materials beneath the site and to enable sample collection for subsequent waste classification purposes. Senversa will collect two samples of fill and one sample of natural material from 10 of the test pit locations. • The remaining 10 locations will be excavated to visually assess the vertical and lateral extent of fill and assist in the development of approximate costs for waste disposal. • Samples will be collected via gloved hand from the middle of the excavator bucket to provide as undisturbed sample as possible. • The lithology will be logged using a modified method based on the Unified Soil Classification System, in accordance with Australian Standard AS1726-2017 and the NEPM, 2013 for each test pit. • A separate sample will be taken from the same depth and screened using a photoionisation detector (PID) fitted with a 10.6 eV lamp to assess for the presence of volatiles. Samples will be placed in a zip-lock bag with head space prior to a reading being taken. • Samples will be selected for analysis based on visual and olfactory indicators of contamination and to allow for a good vertical, lithological and horizontal spread across the site. • Test pits will be re-instated with excavated materials and as the cap is regulated by the EPA, test pits will be compacted via a hydraulic compactor upon completion of works.
5. Landfill Gas and Groundwater Monitoring Well Installation	Five monitoring wells will be constructed within the site. To assess potential landfill gas arising from the onsite fill materials, the monitoring wells are to be utilised as a combined groundwater and landfill gas wells. One well to be located up-gradient, two down-gradient and two within the central portion of the site and installed using the following method:

Task	Proposed Scope
	• Soil bores will be advanced via a track mounted drill rig with a combination of direct push and air hammering drilling methods. • One sample of fill material and one sample of natural material will be collected from each borehole location or where visual / olfactory indicators (staining, odours etc.) of contamination are present. • Groundwater wells will be constructed to a depth of approximately 2 m below the occurrence of groundwater (a maximum depth of 15 m has been assumed). • The wells shall be constructed using 50 mm diameter uPVC slotted screen from the maximum depth of drilling to 1 m below the ground surface (to allow for both groundwater and landfill gas monitoring). • A graded sand shall be placed within the bore annulus adjacent to the screen, with a 1.0 m bentonite seal placed from the surface to 1 m depth below ground level. • The wells will be completed with a stick-up monument to ensure well visibility.
6. Groundwater and Landfill Gas Sampling	Landfill gas and groundwater sampling will be conducted a minimum of approximately one week after installation of the new well to allow sufficient time for conditions to equilibrate as results of samples collected immediately after drilling and development may not be representative of groundwater conditions. The newly installed landfill / groundwater monitoring wells will be sampled using the following methodology: • Landfill gas wells will be physically sampled as per the requirements specified within the NSW EPA ground gas sampling guidelines via a landfill gas meter fitted with an in-line flow meter. The number of monitoring events will be less than the guideline recommended amount. • The standing water levels in each groundwater monitoring well will be gauged using an oil/water interface meter from the top of well casing. The total depth of the groundwater monitoring well will also be measured. Groundwater within the wells will be purged and sampled using low flow methods. • Groundwater samples will be collected and placed into laboratory provided sample containers and stored with a cooler box for transport to the laboratory under Chain-of - Custody procedures. • The samples will be submitted to NATA accredited analytical laboratory for analysis in accordance with the proposed analytical schedule detailed below. • The nominated primary laboratory is Eurofins MGT and the nominated secondary laboratory is ALS Environmental. Samples will be on 5-day turnaround.

The proposed sampling locations are presented on **Figure 3**.

5.1.2 Field QA/QC

The field quality assurance procedures to be adopted and the field quality control samples to be collected during the investigation are presented in **Table 5.2** below.

The field QA / QC plan to be adopted for the investigation has been designed to achieve pre-determined DQIs (refer to **Table 4-6**) that will demonstrate that the precision, accuracy, representativeness, completeness, comparability and sensitivity of the dataset and that the dataset is of acceptable quality to meet the objectives of the site investigation.

Table 5.2: Field QA/QC

Data Type	Comments and Acceptable Control Limits
Field personnel	• Use appropriately trained field personnel.
Field data collection	• Site conditions and sample locations properly described. • Information to be recorded in field notes. Field notes are appropriately completed and summarised in the report on the investigation.
Sample handling (storage and transport)	• Soil and water samples will be collected into the sample jars and bags supplied by the selected analytical laboratories and appropriate for the required analysis.

Data Type	Comments and Acceptable Control Limits
	• All containers will be filled so that minimal headspace is present within the jar. • The filled jars will be stored on ice in a chilled, insulated container until received by the analysing laboratory to retard potential sample degradation. • Sample numbers, dates, preservation and analytical requirements will be recorded on Chain of Custody documentation, which will also be delivered to the analytical laboratory. • All samples are required to be documented as received by the laboratory chilled and intact.
Calibration of Field Equipment	• The PID will be calibrated with isobutylene gas at 100 parts per million at the commencement of each day of sampling, and if necessary, during the day in accordance with the procedure provided by the supplier. • Supplier calibration records will be obtained for all equipment sourced for the investigation. • Calibration records will be kept for inclusion in the report on the investigation.
Decontamination Procedures	Decontamination of non-dedicated sampling equipment will be undertaken in accordance with Senversa's Standard Decontamination Procedures and will generally involve: • Using clean, disposable nitrile gloves for each sample collection event. • Rinsing all non-disposable equipment with deionised water; then a detergent such as Decon / Liquinox; then again with deionised water after each sample collection event. • Where samples are to be analysed for PFAS, decontamination procedures will involve cleaning of equipment with clean / deionised water only.
Field Duplicates (intra-laboratory and inter-laboratory)	• Intra-laboratory duplicates will be collected and analysed at a rate of 1 in every 20 primary samples, with a minimum of 1 sample (or 1 in every 10 for samples to be analysed for PFAS). • Inter-laboratory duplicates will be collected and analysed at a rate of 1 in every 20 primary samples, with a minimum of 1 sample (or 1 in every 10 for samples to be analysed for PFAS). • The duplicate samples will be obtained from locations suspected of being contaminated and analysed for the key CoPCs as collected primary samples.
Rinsate Blanks	• Rinsate blank samples will be collected at a rate of one per day where non-dedicated equipment is used. ▪ Senversa notes that the HEPA NEMP requires additional rinsate samples to be collected for PFAS investigations. It is the opinion of Senversa that as the investigation is not focussed on PFAS, the proposed frequency of rinsate samples is considered appropriate.
Method Blank/Field Blank	• Laboratory prepared trip blanks will be used and analysed at a rate of one per batch for the soil investigation and one per batch for the groundwater investigation.
Trip Spikes	• Laboratory prepared trip spikes will be used and analysed at a rate of one per batch for the soil investigation and one per batch for the groundwater investigation.

5.1.3 Sample Nomenclature

Sample nomenclature will be as outlined in **Table 5-1.3**.

Table 5-1.3: Sample Nomenclature

Sample Media	Sample Location Type	Location	Sample Convention (Example Field Identification)
Soil	Test-Pit	TP101	TP101_sample depth
	Soil Bore	SB01	SB01_sample depth
	Surface Soils	SS01	SS01_sample depth
	Stockpile Soils	SP01	SP01_date of sample collection
Groundwater	Groundwater Monitoring Wells	MW01	MW01_date of sample collection

Sample Media	Sample Location Type	Location	Sample Convention (Example Field Identification)
Landfill Gas	Monitoring Wells	MW01	No laboratory analysis to be undertaken
QA/QC Samples	All samples	Quality Control Samples	• QC101_date of sample collection for duplicates; • QC201_date of sample collection for triplicates; • QC301_date of sample collection for trip blanks; • QC401_date of sample collection for trip spikes; and • QC501_date of sample collection for rinsates.

5.2 Laboratory Methodology

5.2.1 Analysing Laboratories

The nominated primary laboratory is Eurofins MGT and the secondary laboratory is ALS Environmental, both of whom use NATA certified methods for the analysis required.

Asbestos will be analysed for presence absence.

The selection of samples for analysis will be based on field observations and will be conducted in accordance with the analytical program presented in **Section 5.2.2**.

5.2.2 Anticipated Schedule of Analysis

Table 5-3 below outlines the analytical requirements. It is noted that laboratory analysis may be modified where observed site-specific conditions indicate a variation in expected CoPC. In addition, not all samples from the locations will be analysed for all the contaminants listed therein.

Table 5-3: Analytical Schedule

Sample Media	Sample Location Type	Location	Analytical Analysis
Soil	Test-Pit	TP101 to TP120	TRH, BTEX, OCP/OPP, PAHs, PCB, heavy metals, PFAS and asbestos. 10% of collected samples will be analysed for TCLP and ASLP B(a)P, Suspension Peroxide Oxidation – Combined Acidity and Sulphate (SPOCAS), heavy metals and PFAS.
	Soil Bore	MW01 – MW05	TRH, BTEX, OCP/OPP, PAH, heavy metals, PFAS and asbestos. 10% of collected samples will be analysed for TCLP and ASLP B(a)P, heavy metals and PFAS.
	Surface Soils	SS01 – SS05	TRH, BTEX, OCP/OPP, PAHs, heavy metals and asbestos
	Stockpile Soils	SP01 – SP20	TRH, BTEX, OCP/OPP, PAHs, PCBs, heavy metals and asbestos.
Groundwater	Groundwater Monitoring Wells	MW01 – MW05	TRH, BTEX, PAH, PFAS, VOCs, OCP/OPP, nutrients, nitrates / nitrites / ammonia, coliforms (total and faecal) and phthalates.

Sample Media	Sample Location Type	Location	Analytical Analysis
Landfill Gas	Monitoring Wells	MW01 – MW05	NA - field screening to be undertaken for methane, carbon dioxide, oxygen (O_2), hydrogen sulphide (H_2S) and flow rate.

5.2.3 Laboratory QA/QC

The laboratory quality assurance procedures to be adopted and the internal laboratory quality control samples to be analysed and the corresponding acceptable control limits are presented in **Table 5-4** below.

Table 5-4: Laboratory QA/QC

Item	Comments and Acceptable Control Limits
Sample Analysis	All sample analyses to be conducted using NATA certified laboratories which will implement a quality control plan in accordance with NEPC (2013).
Holding Times	All samples are to be submitted to the laboratory within the required laboratory holding times. Maximum acceptable sample holding times include: • Soil: 7 days for pH and some chlorinated hydrocarbon such as vinyl chloride, 14 days for organic analyses and PFAS, 6 months for inorganic analyses and indefinite for asbestos. • Groundwater: 6 hours for pH; 24 hours for *Escherichia coli* and faecal coliforms, 48 hours for nutrients, 7 days for VOCs and SVOCs, 14 days for organic analyses and PFAS, 6 months for inorganic analyses.
Laboratory Detection Limits	• All laboratory detection limits to be less than the adopted assessment criteria, with the exception of PFAS compounds that have screening criteria concentrations lower than the LOR.
Laboratory Blanks	• Laboratory blanks to be analysed at a rate of 1 in 20, with a minimum of one analysed per batch.
Laboratory Duplicates	• Laboratory duplicates to be analysed at a rate of 1 in 20, with a minimum of one analysed per batch.
Laboratory Control Samples (LCS)	• LCSs to be analysed at a rate of 1 in 20, with a minimum of one analysed per analytical batch.
Surrogates	• Surrogate compound concentrations will be required to be spiked at similar concentration to sample results, at a rate of 1 in 20.
Matrix spikes	• Matrix spikes matrix spike duplicate prepared by dividing a field sample into two aliquots, then spiking each with identical concentrations of the analytes at a rate of 1 in 20.

6.0 Assessment Criteria

The assessment criteria listed in **Table 6-1** should be adopted for the purpose of preliminary screening concentrations of contaminants.

Table 6-1: Assessment Criteria

Media	Adopted Assessment Criteria
Soil	Human Health Soil contaminant concentrations will be compared against published values consistent with requirements in NEPM, 2013 sourced from the following: • **Health Investigation Levels** (HILs): ▪ HIL D (commercial / industrial). • **Health Screening Levels**[1] (HSLs) for vapour intrusion: ▪ **HSL D** (commercial / industrial). Use of these values for screening purposes is considered conservative for samples collected at greater depth or silt/ clay formation. Soil properties will be determined during the investigations. Asbestos will be screened for presence / absence. In addition to the above, although not specifically included in the NEPM, the following will also be used: • PFAS specific human health criteria will be sourced from the *PFAS National Environmental Management Plan, Heads of Environment Protection Authority* (HEPA) (2018) assuming the same land uses above. Ecological Soil contaminant concentrations will be compared against published values consistent with requirements in NEPM, 2013 sourced from the following: • Ecological Investigation Levels (EILs) for assessment of risks to terrestrial ecological receptors for an urban residential/ public open space setting. The input parameters for the Added Contaminant Limits will be determined during the investigation. Ambient Background Concentrations will be sourced from Schedule B5 of the NEPM, 2013. • Ecological Screening Levels (ESLs) for assessment of risks to terrestrial ecological receptors assuming for an urban residential and public open space setting. Soil properties will be determined during the investigations. • PFAS specific ecological criteria will be sourced from the PFAS National Environmental Management Plan, Heads of Environment Protection Authority (HEPA) (2018) assuming the same land uses above. The NEPM (NEPC, 2013) specifies the following ecologically based investigation / screening levels: • Default Ecological Investigation Level (EILs) for arsenic, lead, DDT and naphthalene. • A methodology for derivation of site-specific EILs for lead, nickel, chromium III, copper and zinc. The derivation process requires determination of ambient background concentrations (ABC) and added contaminant limits (ACLs) for these chemicals, and the EIL is then calculated as the ABC plus the ACL. In the absence of site-specific data for pH and CEC only the most conservative ACL has been adopted as the screening criteria for these analytes. • Ecological screening levels (ESLs) for benzene, toluene, ethylbenzene and xylenes (BTEX), benzo(a)pyrene and petroleum hydrocarbon fractions. Based on the currently approved land use, EILs/ESLs for commercial and industrial have been adopted. Management Limits Management Limits for assessment of risks to both human health in commercial and industrial settings will be applied subsequent to the above screening criteria. Aesthetic Consideration with also be given to the aesthetics of the soil encountered.
Groundwater	Human Health For the purpose of this assessment, groundwater concentrations of contaminants will be compared against published values consistent with requirements in NEPM, 2013 sourced from the following in the specified order of preference:

[1] Senversa notes that appropriated depth and nature of soil content for HSLs criteria will be defined during investigative intrusive works to better reflect site conditions.

Media	Adopted Assessment Criteria

- Health Screening Levels (HSLs) for vapour intrusion – HSL D (commercial / industrial) asper the NEPM, 2013.
- National Health and Medical Research Council (2011) *Australian Drinking Water Guidelines* (updated August 2018). While groundwater is considered unlikely to be used for drinking purposes in the vicinity of the site, screening against drinking water guideline values will be conducted on a conservative basis under the scenario that groundwater is extracted and used for other purposes. Screening against drinking water guideline values has also been conducted on a conservative basis under the scenario that groundwater has the potential to discharge to a surface water body which could be used for recreational purposes.
- Australian and New Zealand Environment Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000). On the basis that the most likely nearest potential surface water receptor is a fresh water body, Trigger Values for fresh water and 95% protection levels (unless otherwise noted) have been adopted. Comparison against these criteria is considered conservative as some attenuation of chemical constituents would be expected prior to groundwater at the site reaching the nearest potential surface water receptors (Lane Cove River to the west and Stringybark Creek to the north).
- PFAS specific human health criteria will be sourced from the *PFAS National Environmental Management Plan*, Heads of Environment Protection Authority (HEPA) (2018) for drinking water and recreational water.

Ecological

- Australian and New Zealand Environment Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZAST, August 2018). On the basis that the most likely nearest potential surface water receptor is a fresh water body, Trigger Values for fresh water and 95% protection levels (unless otherwise noted) have been adopted. Comparison against these criteria is considered conservative as some attenuation of chemical constituents would be expected prior to groundwater at the site reaching the nearest potential surface water receptors (Lane Cove River to the west and Stringybark Creek to the north).
- PFAS specific ecological criteria will be sourced from the *PFAS National Environmental Management Plan*, Heads of Environment Protection Authority (HEPA) (2018) for the protection of 95 % or 99 % (where appropriate) for freshwater species.

7.0 Reporting

On completion of investigative works, Senversa will summarise the findings of the investigation in a report consistent with NSW EPA made or approved guideline reporting requirements (including the NSW Office of Environment and Heritage (2011) *Guidelines for Consultants Reporting on Contaminated Sites*. The following will be included as a minimum:

- Executive summary.
- Scope of works.
- Site identification information.
- A summary of the site history, site conditions, surrounding environment, geology and hydrogeology.
- Sampling and Analysis Plan and Sampling Methodology.
- Field and laboratory QA / QC information and an evaluation of the appropriateness and usability of the data obtained.
- Field and laboratory results compared to the assessment criteria.
- Site Characterisation including estimation of onsite fill volumes.
- Conclusions and Recommendations

8.0 Principles and Limitations of Investigation

The following principles are an integral part of site contamination assessment practices and are intended to be referred to in resolving any ambiguity or exercising such discretion as is accorded the user or site assessor.

Table 8-1: Principles and Limitations

Area	Field Observations and Analytical Results
Elimination of Uncertainty	Some uncertainty is inherent in all site investigations. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population or area. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty.
Failure to Detect	Even when site investigation work is executed competently and in accordance with the appropriate Australian guidance, such as the National Environmental Protection (Assessment of Site Contamination) Amendment Measure ('the NEPM'), it must be recognised that certain conditions present especially difficult target analyte detection problems. Such conditions may include, but are not limited to, complex geological settings, unusual or generally poorly understood behaviour and fate characteristics of certain substances, complex, discontinuous, random, or heterogeneous distributions of existing target analytes, physical impediments to investigation imposed by the location of services, structures and other man-made objects, and the inherent limitations of assessment technologies.
Limitations of Information	The effectiveness of any site investigation may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and assessor to obtain such information.
Chemical Analysis Error	Chemical testing methods have inherent uncertainties and limitations. Senversa routinely seeks to require the laboratory to report any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.
Level of Assessment	The investigation herein should not be considered to be an exhaustive assessment of environmental conditions on a property. There is a point at which the effort of information obtained and the time required to obtain it outweigh the benefit of the information gained and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment.
Comparison with Subsequent Inquiry	The justification and adequacy of the investigation findings in light of the findings of a subsequent inquiry should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.
Data Useability	Investigation data generally only represent the site conditions at the time the data were generated. Therefore, the usability of data collected as part of this investigation may have a finite lifetime depending on the application and use being made of the data. In all respects, a future reader of this report should evaluate whether previously generated data are appropriate for any subsequent use beyond the original purpose for which they were collected or are otherwise subject to lifetime limits imposed by other laws, regulations or regulatory policies.
Nature of Advice	The investigation works herein are intended to develop and present sound, scientifically valid data concerning actual site conditions. Senversa does not seek or purport to provide legal or business advice.

9.0 References

ANZAST (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.

Australian Standard (2005). *AS 4482.1 2005, Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 2: Non-volatile and Semi-volatile compounds*.

Australian Standard (1999). *AS 4482.2 1999, Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances*.

Environmental Investigations Australia (2006), *Environmental Site Assessment, 1 Sirius Road, Lane Cove, NSW*, 3 July 2006.

Environmental Investigations Australia (2007), *Remedial Action Plan, 1 Sirius Road, Lane Cove, NSW*, 31 January 2007.

National Health and Medical Research Council (2011). *Australian Drinking Water Guidelines ADWG* [updated August 2018].

Heads of Environment Protection Authority (2018). *PFAS National Environmental Management Plan*.

National Environment Protection Council (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1).*

National Health and Medical Research Council / National Resource Management Ministerial Council, Commonwealth of Australia, Canberra (2011). *Australian drinking water guidelines paper 6 national water quality management strategy.*

New South Wales Environment Protection Authority (1995). *Sampling Design Guidelines.*

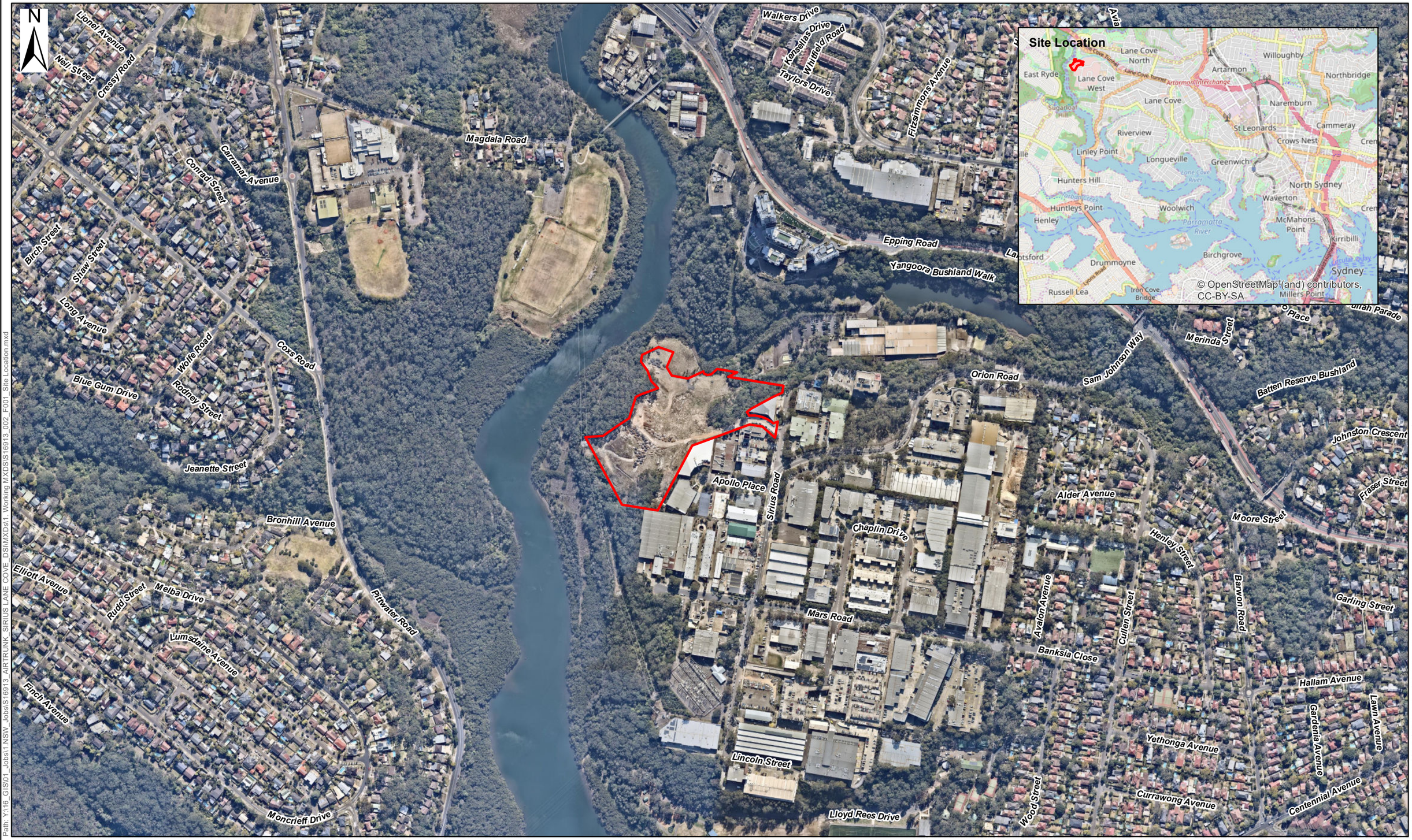
New South Wales Environmental Protection Authority (2005), Notice Maintaining Remediation' (No.28027, 27 September 2005).

New South Wales Environment Protection Authority (2017a). *Designing Sampling Programs for Sites Potentially Contaminated by PFAS*.

New South Wales Office of Environment and Heritage (2011). *Guidelines for Consultants Reporting on Contaminated Sites.*

Senversa (2018). *Phase 1 Environmental Due Diligence Assessment, 1 Sirius Road, Lane Cove West, NSW,* dated 18 October 2018 and referenced S16913_002_RPT_Rev1.

Figures



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senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

Site Boundary

Notes:
Aerial imagery sourced from Nearmap Pty Ltd

Designed:	R. McKinnon	Date:	11/10/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:6,000 (A3)
File:	S16913_002_F001_Site Location		

0 37.5 75 150 225 300 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 1

Title: Site Location

Project: Phase 1 Due Diligence

Location: 1 Sirius Road Lane Cove Lot 1 DP 1151370

Client: AirTrunk Pty Ltd

Path: Y:\16_GIS\01_Jobs\1 NSW_Jobs\S16913_AIRTRUNK_SIRIUS LANE COVE_DSI\MXDs\1. Working MXDS\S16913_002_F002_Site Layout.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

Site Boundary

Notes:
Aerial imagery sourced from Nearmap Pty Ltd

Designed:	R. McKinnon	Date:	11/10/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:1,250 (A3)
File:	S16913_002_F002_Site Layout		

0 5 10 20 30 40 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 2

Title: Site Layout

Project: Phase 1 Due Diligence

Location: 1 Sirius Road Lane Cove Lot 1 DP 1151370

Client: AirTrunk Pty Ltd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

Proposed Sampling Location

- Groundwater Monitoring Well Location
- Surface Sample Location
- Test Pit Location
- Site Boundary

Notes:
Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	25/10/2018
Drawn:	M. Byrne	Revision:	0
Checked:	.	Scale:	1:1,250 (A3)
File:	S16913_004_F003_Proposed Sample Locs		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 3

Title: Proposed Sample Locations

Project: Sampling and Analytical Quality Plan

Location: 1 Sirius Road Lane Cove Lot 1 DP 1151370

Client: AirTrunk Pty Ltd

senversa

tel: + 61 2 8252 0000
fax: + 61 3 9606 0074
enquiries@senversa.com.au
www.senversa.com.au
Level 5, The Grafton Bond Building, 201 Kent St, Sydney NSW 2000
Senversa Pty Ltd ABN 89 132 231 380