

DHL Supply Chain (Australia) Pty Limited
Level 4, Building C
1 Homebush Bay Drive
Rhodes NSW 2138

Project 86548.20
12 March 2025
R.008.Rev0
GAR

Attention: Lloyd Henderson
Email: lloyd.henderson@dhl.com

Contamination Summary Letter Proposed Commercial/Industrial Development DHL Stage 1, Part of 1953 - 2109 Elizabeth Drive, Badgerys Creek NSW

1. Introduction

Douglas Partners Pty Ltd (Douglas) was commissioned by DHL Supply Chain (Australia) Pty Limited (DHL) to prepare a contamination summary letter for the proposed commercial/industrial development at DHL Stage 1, Part of 1953 - 2109 Elizabeth Drive, Badgerys Creek NSW (the "site", as shown on Drawing 1, attached).

It is understood that DHL proposes to develop the site as a warehouse and logistics centre and have recently submitted a state significant development application (SSDA 70818708). Douglas has completed several contamination investigations for the site and wider surrounds of the Burra Park precinct and several of the contamination reports were included in the SSDA submission.

It is further understood that a Stage 2 Detailed Site Investigation (Stage 2 DSI) has also been completed for the wider Burra Park property by Development Risk Management Pty Ltd (DRM) and that the DSI was also included in the SSD – 70316465 environmental impact statement (EIS).

The NSW Government has requested additional information (RFI dated 20 December 2024) regarding the Stage 1 SSDA which includes the following:

"Contamination - The DSI and RAP have been prepared by a different consultant to Burrah Park, which also assessed contamination across the DHL site and made different conclusions and recommendations."

This contamination summary letter was therefore required to summarise the findings of previous contamination investigations and the remediation/further investigation requirements for the site.

2. Scope of work

The scope of work for the contamination summary letter by Douglas was as follows:

- Review and summarise previous investigation reports and results relating to the DHL Stage 1 site; and
- Preparation of this summary letter including the remediation and/or further investigation requirements for the site.

3. Site information

Site address	Part of 1953 - 2109 Elizabeth Drive, Badgerys Creek
Legal description	Part Lot 1 on Deposited Plan (D.P) 1306448 (includes Stage 1)
Approximate area	Stage 1: Approximately 11.9 ha Broader DHL site: 25 ha
Zoning	ENT Enterprise and ENZ Environment and Recreation adjacent to the south west site boundary
Local council area	Penrith City Council
Current use	Vacant land and a former residence in the southern portion. The majority of the site is grass-covered with tree growth around the former residence.
Surrounding uses	North – DHL stage 2, followed by The Norther Gateway (TNG) site (vacant, pastoral and rural residential) followed by bushland and residential land use (Luddenham suburb) East – Vacant pastoral Western Sydney University site, followed by SUEZ Kemps Creek Resource Recovery Park and landfill (adjacent to Badgerys Creek) – a licenced waste facility and operates under an Environmental Protection Licence (Licence No. 4068). South – TNG site (vacant and pastoral) followed by Elizabeth Drive and the followed by commercial and rural residential properties (part of Badgerys Creek) West – TNG site (vacant and pastoral) followed by Cosgroves and Oaky Creek, followed by commercial and rural residential properties (part of Luddenham)

4. Previous contamination investigations

Douglas and other consultants have previously completed the following contamination investigations for the subject site and/or nearby areas, associated with the Stage 1 portion of the site:

- Douglas (2004) Report on Soil Assessment, 1984 - 2107 Elizabeth Drive, Badgerys Creek, Project 36288, dated 16 January 2004 (Douglas 2004);
- El Australia Pty Ltd (EI) Report on Preliminary Site Investigation, 1953-2109 Elizabeth Drive, Badgerys Creek, NSW, Report E23773.E.01_Rev0, dated 30 May 2018 (EI 2018);
- Douglas (2019), Report on Preliminary Site Investigation, The Northern Gateway, 1953 – 2109 Elizabeth Drive, Badgerys Creek, Project 86548.00.R.002.Rev1, November 2019 (Douglas 2019);
- Douglas (2020), Report on Sampling and Analysis Quality Plan, The Northern Gateway, 1953 – 2109 Elizabeth Drive, Badgerys Creek, NSW, Project 86548.03, Rev. 1 (Douglas, 2020);
- Douglas (2024) *Report on Site Review Detailed Site Investigation for Contamination, DHL Site – Stage 1, Part of 1953 – 2109 The Northern Road, Badgerys Creek, NSW, report reference 86548.20.R.001.Rev1* dated 19 September 2024 (Douglas, 2024 – ‘the DSI’);
- Douglas (2024a) *Report on Hazardous Building Materials (HBM) Survey, DHL Site – Stage 1, Part of 1953 – 2109 Elizabeth Drive, Badgerys Creek, NSW, report reference 86548.20.R.003.Rev1* dated 19 September 2024 (Douglas, 2024a – ‘the HBM’);
- Douglas (2024b) *Report on Review Supplementary Contamination Investigation, DHL Site – Stage 1, Part of 1953 – 2109 The Northern Road, Badgerys Creek, NSW, report reference 86548.20.R.006.Rev1* dated 19 September 2024 (Douglas, 2024b – ‘the SCI’);
- Douglas (2024c) *Remediation Action Plan, DHL Site – Stage 1, Part of 1953 – 2109 The Northern Road, Badgerys Creek, NSW, report reference 86548.20.R.004.Rev1* dated 19 September 2024 (Douglas, 2024c – ‘the RAP’); and
- DRM (2024) *Stage 2 Detailed Site Investigation, Concept & Stage 1 SSDA for A Warehouse and Logistics Estate, 1953-2109 Elizabeth Drive, Badgerys Creek NSW, report reference DRM P24 1002.V02a-R01* dated 16 August 2024.

Key findings of the review of relevance to this report are summarised below:

4.1 Douglas 2004 – Soil Assessment

The Douglas (2004) investigation was undertaken to evaluate the soil conditions within areas of the site which had food wastes applied to ground. The scope of the assessment included the collection of three to five surface soil samples and assessment of soil analytical results from eight paddock areas at the site, of which one area is within the current site (Area 16). Based on the results of the testing and site observations, it was considered that given the condition of the site, it would be compatible with a variety of land uses, including commercial and industrial developments. However, further investigation of hydrocarbons that were detected would be required to confirm this. It is noted that the Douglas (2004) investigation was undertaken prior to key guidance on per- and polyfluoroalkyl substance (PFAS) impact.

4.2 EI 2018 – Preliminary Site Investigation

The EI (2018) assessment comprised a qualitative assessment of the site from a contamination perspective. The scope of the assessment included a site inspection and site history search. The EI (2018) assessment generally concluded that the wider site could be made suitable for development subject to further investigations of possible localised contamination sources, including:

- A scientific animal research farm known as the McMaster Field Station operated by the CSIRO, where animal health, reproduction, parasitological and other pastoral issues were studied. From 1996 until present date, the site has been used to graze cattle, and (more recently) for commercial purposes including firewood storage and mulching;
- Homesteads with associated sheds;
- Isolated dumping; and
- Two petroleum storage tanks were present on the wider TNG site but not within DHL Stage 1 area.

4.3 Douglas 2019b – Preliminary Site Investigation

Douglas (2019b) undertook a Preliminary Site Investigation (PSI) of the TNG site to evaluate the contamination status of the site regarding its compatibility, from a contamination perspective, for the proposed mixed-use development. The scope of the PSI included a desktop review, a site walk over and limited intrusive soil sampling and analysis. Based on the desktop review, site walk over and geotechnical field observations, several areas were identified as Potential Areas of Environmental Concern (PAEC). Based on the findings of the limited intrusive investigation and the desktop assessment, three PAECs were declared Areas of Environmental Concern, of which there are two within the current site (AECs 18 and 36), and one AEC (19) located immediately adjacent to the southeast of the subject site, required further investigation. The AECs generally fall within the following categories:

- Structures – i.e.: degradation and demolition of structures and leaks and spills;
- Ground disturbances/Fill; and
- Timber power poles.

4.4 Douglas 2020 – Sampling and Analysis Quality Plan

Douglas (2020) prepared a Sampling and Analysis Quality Plan (SAQP) for the DSI of the wider TNG site, the scope of which included a review of previous investigations, a site walk over and a data gaps assessment to establish what data is needed to assess whether or not the site is suitable for the proposed development, from a contamination assessment. The SAQP defined the number, type and locations for soil and groundwater sampling to assess the site in particular data gaps. The SAQP also presented a methodology for sample collection, preservation and storage and establish data quality objectives (DQOs) as well as quality assurance and quality control (QA/QC) procedures.

The SAQP documented the targeted sampling approach and analysis of the three identified AEC relevant to the subject site as well as the remaining AEC at the wider DHL site and TNG site.

4.5 Douglas 2024 – Detailed Site Investigation

The DSI was a revision of a previous DSI (86548.20.R.001.Rev0 dated 8 August 2023) completed in August 2023. The DSI was completed to document the findings of a Detailed Site Investigation for Contamination (the TNG DSI) previously undertaken for the Northern Gateway DHL Site Project at 1953 -2109 Elizabeth Drive, Badgerys Creek, NSW ('TNG site' – report reference 86548.08.R.001.Rev0) and of relevance to DHL Stage 1 ('the site').

The TNG DSI included a review of the SAQP, a detailed site walkover of AECs and an intrusive investigation including test pits in AECs and across the remainder (background) of the site relevant to the subject site, collection of surface soil samples in the vicinity of timber power poles, soil vapour and groundwater sampling and analysis across the wider TNG site.

Soil analytical results were assessed against SAC and reviewed alongside observations made in the detailed site walk over. The findings of the DSI established that there was no evidence of widespread or significant contamination across the site. Localised contamination in some AECs was observed as requiring further investigation, delineation and/or remediation. Sampling locations and identified AEC are shown on Drawing 2, attached.

The AECs relevant to the subject site requiring further works are summarised below:

- AEC 36 – An exceedance of Metals (As) was recorded for surface soils around one of the two power poles assessed at the site. It was noted that exceedances of metals, TRH, benzo(a)pyrene, total PAHs and total PCBs have been observed next to power poles from elsewhere across the wider TNG site. It was noted that the number of exceedances observed in the DSI for the wider TNG site indicate additional targeted investigations of all power poles would be required to establish and further define which are suitable to be retained on site and which will require remediation;
- AEC 19 (Located immediately adjacent to the site) – ACM impact on the ground surface, a targeted investigation (double density, with reference to NSW EPA 1995 guidelines) should be undertaken to ascertain the extent of asbestos impact here. Where observed, ACM fragments on the surface should be removed by hand and the process documented in a RAP; and
- Background Areas - The DSI identified concentrations of nickel in shallow soil at levels exceeding the ecological SAC investigation levels (45 mg/kg) at Pit 408 (94 mg/kg). Further investigation would be required to assess whether the nickel exceedance was either an anomalous isolated occurrence or indicative of more extensive nickel impact to site soil that may require remediation.

Based on the results, the DSI considered that the site is suitable for rezoning and development from a contamination perspective subject to the above additional investigations and/or remediation works being undertaken prior to subdivision.

4.6 Douglas 2024a – Hazardous Building Material

The purpose of HBM (2023) survey was to assess the on-site buildings located in the south eastern portion of the site for potential hazardous building material existing within the subject site from a management perspective, and not for the purpose of pre-demolition.

The HBM survey comprised a non-destructive, non-intrusive visual inspection of safely accessible areas to assess the general location, extent, and condition of asbestos-containing materials (ACM) and other HBM including lead paint, lead dust, synthetic mineral fibre (SMF) and polychlorinated biphenyls (PCBs) in fluorescent light fittings. Samples of suspected ACM, lead paint and dust were collected by Douglas using hand tools. SMF insulation and light fittings suspected of containing PCBs were assessed primarily by visual inspection.

Hazardous building material sample locations are shown on Drawing 4, attached.

The HBM survey identified hazardous materials in two structures within the subject site as follows:

- Building HS (house structure) - contained non-friable asbestos within interior ceiling and walls sheeting. Lead was also detected in exterior and interior paint from the building, and it presented elevated lead dust concentration ($\geq 0.5 \text{ mg/m}^2$); and
- Building GS (garage structure) - contained lead in interior and exterior paint(s), elevated lead dust concentration ($\geq 0.5 \text{ mg/m}^2$) and SMF was detected through the ceiling cavity.

4.7 Douglas 2024b – Supplementary Contamination Investigation

A review of the Supplementary Contamination Investigation (SCI) for the wider site was required to further investigate the AEC identified by the DSI and associated contaminants of potential concern (CoPC) relevant to subject site to determine the vertical and lateral extent of the contamination issues and/or whether remediation is required. The SCI was a revision of a previous SCI (86548.20.R.006.Rev0 dated 17 August 2023) completed in August 2023.

SCI fieldwork was completed at the site on 14 to 20 December 2022 and 7 to 9 February 2023. SCI sample locations are shown on Drawing 3, attached. To assess the AEC identified as requiring further investigation, the following scope of work was completed:

- AEC36 - Power pole delineation soil sampling in the vicinity of PP10 - To assess the lateral extent of impact, initial sampling was completed at 1 m and 1.5 m lateral step outs to the North, East, South and West of power pole PP10, and at depths of 0.1 m and 0.3 m for vertical delineation. Delineation samples were sent for laboratory analysis of PAH;
- AEC36 - Collection of a surface soil sample from the base of power pole PP11 that had previously not been assessed. The sample was sent for laboratory analysis for power pole related COPC including PAH and TRH;
- Background areas - To further investigate the extent of nickel impact to soils in the vicinity of pit 408, collection of shallow fill samples (at depths of 0.0-0.2 m bgl) at the four cardinal points (north, east, south and west) approximately 2.0 m and 4.0 m from Pit 408. The 2 m samples and the 0.4 mbgl (from Pit 408) were sent to the laboratory for analysis of nickel;
- AEC19 - Excavation of two strip trenches in the vicinity of Pit 591 (AEC19) with an excavator to visually identify/confirm the extent of fill in the area and the depth to natural soils. Collection of five 10 L bulk and five 500 mL soil samples from each metre of fill encountered within the area to be inspected and analysed, respectively, in accordance with WA DoH 2021; and

- On-site buildings - Collection of soil surface samples (0 - 0.1 mbg) in the vicinity of the exterior walls of the buildings (HS and GS) - one sample was collected for every approximate 10 m surrounding each structure wall. Laboratory analysis of the samples collected in the vicinity of the dwellings and sheds for COPC including asbestos, lead, TRH, BTEX, PAHs, OCPs, OPPs, PCBs and Phenols.

The results of the SCI identified the following AEC relevant to the subject site as requiring risk management and/or remediation as summarised below:

- AEC 36: The results of power pole delineation sampling at power pole (PP10), identified the lateral extents of surface topsoil, as requiring remediation across an approximate area of 4 m² to a vertical depth of approximately 0.3 m bgl. Exceedances for ESLs and or public open space criteria only (without exceeding commercial/industrial criteria) were not considered to warrant remediation of soil in the vicinity of the power pole (PP11) given the primary commercial/industrial land use of the site and the limited potential for public or ecological access to soil;
- Building Footprints: No remediation works are warranted for soils in the vicinity of the on-site buildings in their current state. As well as following the recommendations of the HBM report, the footprints should be inspected by an Environmental Consultant after demolition for residual building materials and fill below the footprint. If fill or residual building materials are present, a targeted building footprint investigation should be undertaken; and
- AEC 19 (Located immediately adjacent to the site): Whilst the fill in the vicinity of pit 591 is considered suitable from a contamination perspective to remain on-site, given the presence of ACM identified on the surface, minor remediation will be required to ensure that no visible asbestos remains in surface soils in the vicinity of pit 591. It is noted that the area identified within AEC 19 as requiring remediation is not within the Stage 1 boundary.

The identified AEC are considered typical of other rural properties in the area and are generally considered relatively localised, limited in extent and not representative of widespread gross contamination of the site and are readily amenable to clean-up through conventional remediation approaches.

4.8 Douglas (2024c) – RAP

The RAP was a revision of a previous RAP prepared for the wider site.

The RAP was prepared to establish appropriate remediation objectives, strategies, methodologies, and validation processes to remediate AEC (if required) in accordance with EPA requirements. It also detailed the requirements and methodologies for further investigation of the identified AEC which required further assessment and to determine the extents of AEC as potentially requiring remediation.

4.9 DRM (2024) Stage 2 Detailed Site Investigation

In August 2024, DRM completed a Stage 2 DSI (DRM Stage 2) for the wider Burrah Park property. The scope of work completed by the DRM Stage 2 included:

- Review of the series of contamination assessments that were conducted by Douglas across the site, as well as the broader property;
- Review of the remediation action plan (RAP) prepared by Douglas;
- Conducting additional investigation across the wider Burrah Park property to address issues identified through the review of Douglas reports. The additional assessments/fieldwork, completed in May 2024, conducted across the wider Burrah Park property included:
 - o Excavation of 46 test pits to a depth of 1 m bgl in “five fields” within AEC35 and collecting samples at regular depths for analysis for PFAS at depth – Five of the test pits (007 to 011) were completed with the Stage 1 site; and
 - o Excavation of 21 test pits within the crushed glass stockpiles and crushed glass filled embankment within AEC26 and collection of samples for analysis of lead – None of these AEC26 test pits were completed within the Stage 1 site.

The DRM Stage 2 laboratory analytical results indicated the following:

- PFAS was not reported above the laboratory limit of reporting (LOR);
- Concentrations of lead were below the adopted assessment criteria of 1500 mg/kg in the 20 samples collected and analysed from the crushed glass (located outside of the subject site);
- Concentrations of As, Cd, Cr, Cu, Hg, Ni and Zn were less than their respective assessment criteria.

Based on the assessment of site history, previous comprehensive assessment by Douglas, DRM’s targeted investigations, site observations and analytical results, DRM made the following conclusions with relation to the wider Burrah Park property:

- The potential for significant widespread contamination at the site is low;
- There is potential for unauthorised potentially contaminating activities to have occurred within the site, including importation, processing and burial of contaminated and waste materials. As such, the potential for yet unidentified contamination or waste materials to be present between sampling points cannot be precluded and could be encountered during proposed earthworks;
- Asbestos has been identified within AECs 15, 16, 21, 26, 21 and 32, predominantly in the form of asbestos pipes (loose sections above the ground, as well as buried networks of asbestos pipes). Fragments of asbestos containing materials have also been observed on the surface of AEC19 and AEC22;
- Highly localised contamination (metals, TRH and PAH) has been identified at 25 identified power poles within the wider Burrah Park property;
- The crushed glass stockpile in AEC26 is not contaminated with lead, and is suitable for beneficial re-use onsite; and

- The site can be made suitable for the proposed commercial/industrial land use, subject to remediation of the identified contamination in accordance with the remediation action plan (Douglas, 2023b).

DRM made the following recommendations:

- Conduct a post demolition contamination assessment of the site structures when they are demolished, and prepare an addendum to the RAP if additional remediation is warranted;
- Assess the dam water and sediment quality prior to dam dewatering and beneficial re-use of dam sediment;
- Any topsoils from asbestos impacted AECs will require appropriate testing prior to potential beneficial re-use;
- Prepare a validation report for remediation works completed, to demonstrate that the site, or part of the site has been made suitable for the proposed commercial/industrial land use; and
- Manage any yet unidentified contamination or waste materials that may be encountered during earthworks in accordance with an unexpected finds protocol.

5. Contamination summary

A CSM was documented in the SAQP (Douglas, 2020) and updated during the DSI (Douglas, 2024) and the RAP (2024c).

Based on the results of the previous contamination investigations, it is considered that the subject site can be made suitable for the proposed commercial/industrial development subject to implementation of the remediation actions/further investigation requirements by Douglas for each source as summarised in Table 1.

Table 1: Summary of AEC, potentially complete exposure pathways, receptors and remediation actions required and or further investigation recommendations for Stage 1

Source/COPC	Transport Pathway	Receptor	Remediation action/further investigation requirements
AEC36			
Timber treatment and PCBs in transmission box(es): Metal, TRH, benzo(a)pyrene, total PAHs, total PCBs.	Direct contact of contaminated ground, ingestion and dermal contact with soil or water, inhalation of dust, leaching of contaminants and vertical migration into groundwater, lateral migration of groundwater.	Future site users Ecological receptors	The results of Douglas (2024b) power pole delineation sampling for PP10 identified the lateral extents of surface topsoil as requiring remediation, to be limited to within 1 m (north, south, east and west) of the power pole across an approximate area of 4 m² to a vertical depth of approximately 0.3 m bgl. The remediation and validation methodology of soil in the vicinity of power pole PP10 is documented in the Douglas (2024c) RAP. It is noted that DRM (2024) also identified highly localised contamination at timber power poles onsite as requiring remediation.
General (southeastern portion of the site)			
Building footprints – heavy metals, TRH, BTEX, OCP, OPP, PCB, PAH, phenols and asbestos	Inhalation of dust	Future site users Adjacent land users	Results identified that no remediation works are warranted for soils in the vicinity of the on-site buildings in their current state. As well as following the recommendations of the HAZMAT, Douglas (2024c) recommended the footprints should be inspected by an Environmental Consultant after demolition for residual building materials and filling below the footprint. If filling is present, a targeted building footprint investigation should be undertaken. It is noted that DRM (2024) also recommended a post demolition contamination assessment of the site structures when they are demolished. This is yet to be undertaken.

Source/COPC	Transport Pathway	Receptor	Remediation action/further investigation requirements
AEC 19 (adjacent to the site)			
Filling/ACM impact on the ground surface – asbestos	Inhalation of dust	Future site users Adjacent land users	Whilst the fill in the vicinity of pit 591 is considered suitable from a contamination perspective to remain on-site, Douglas (2024c) recommended minor remediation will be required to ensure that no visible asbestos remains in surface soils in the vicinity of pit 591. Whilst the area identified within AEC19 as requiring remediation is not within the site boundary, Douglas (2024c) recommended that additional inspections should be completed nearby or within the Stage 1 boundary prior to any significant soil disturbance. If ACM is encountered on site surfaces nearby or within site boundary, remediation will be required likely in the form of emu picking. It is noted that DRM (2024) also identified fragments of ACM at AEC19. DRM (2024) also recommended that any topsoils from asbestos impacted AECs will require appropriate testing prior to beneficial re-use. Validation sampling requirements for ACM impacted areas have been documented in the Douglas (2024c) RAP.

In addition to the remediation actions/further investigation requirements recommended by Douglas as summarised in Table 1, it is noted that DRM also recommended to assess the dam water and sediment quality prior to dam dewatering and beneficial re-use. Douglas agrees that an assessment of the dam water and sediment quality should be completed prior to dam dewatering and beneficial re-use.

6. Conclusions and recommendations

It is considered that remediation and validation of identified contamination at the site, as discussed in Section 5, undertaken in accordance with the RAP will satisfy the provisions of clause 4.6 (1) of SEPP (*Resilience and Hazards*), and render the site suitable from a contamination perspective.

Notwithstanding the above, the potential remains for isolated pockets of contamination to be present in areas of the site. To appropriately manage unexpected potential contamination issues encountered during development works, the protocol described in the Contingencies for Unexpected finds in section 18 of the RAP (ref. 86548.20.R.004.Rev1) should be followed. Additionally, any materials requiring off-site disposal must be classified, managed and disposed in accordance with the *Protection of the Environment Operations Act 1997*.

This report should be read in conjunction with the recommendations and limitations sections listed in the above referenced reports. We trust that the above is suitable for your present requirements. Please do not hesitate to contact the undersigned with any further queries.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully

Douglas Partners Pty Ltd

A handwritten signature in blue ink, appearing to read 'GR RUSSELL'.

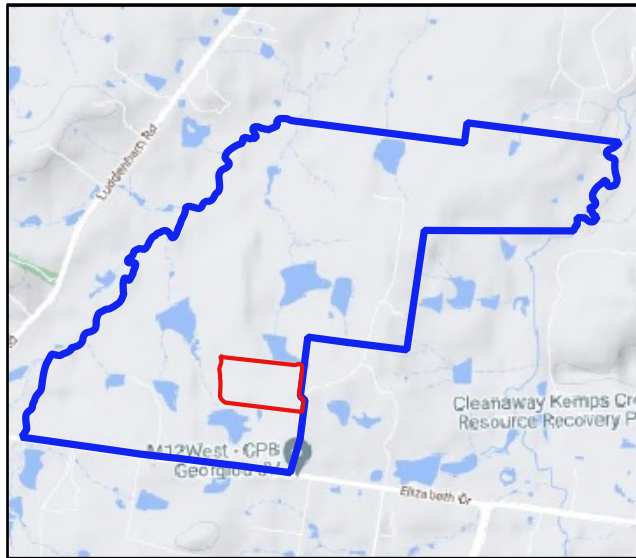
Grant Russell
Senior Associate

Reviewed by

A handwritten signature in blue ink, appearing to read 'Dean Woods'.

Dean Woods
Principal

Attachments: Drawings 1 to 4
About this Report



Legend

- DHL Stage 1
- DHL Site Boundary
- The Northern Gateway Boundary (TNG)

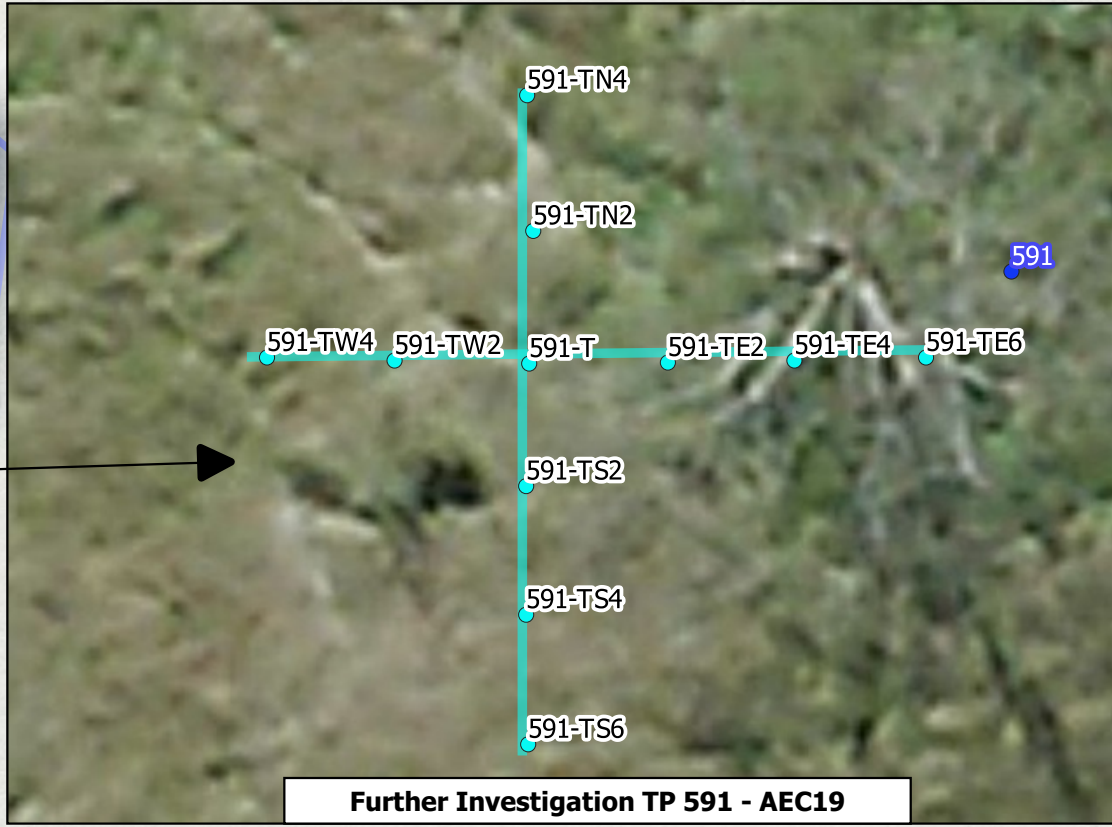
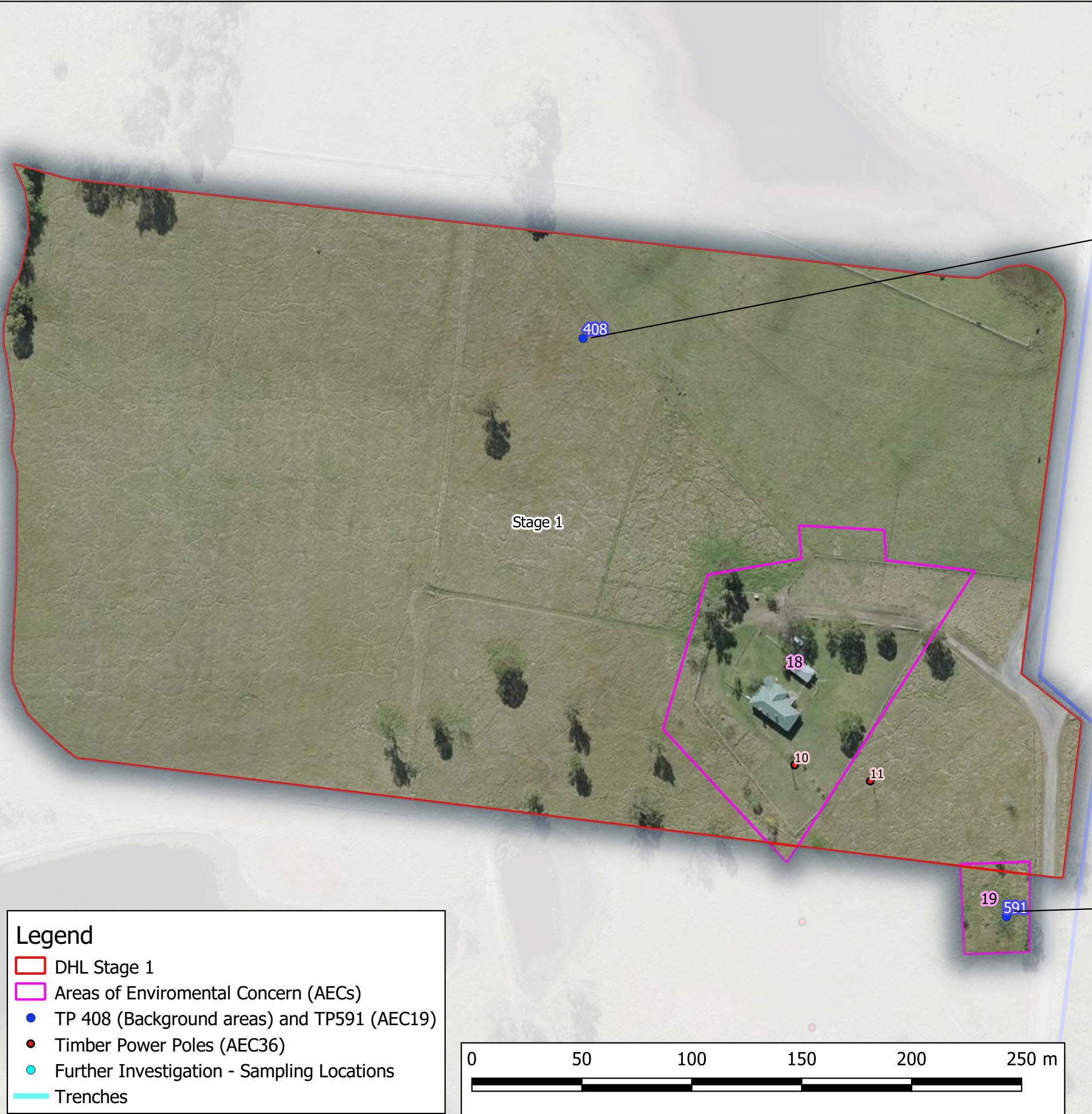


 Douglas Partners <i>Geotechnics Environment Groundwater</i>	CLIENT: DHL Supply Chain (Australia) Pty Ltd		TITLE: Drawing 1 - Site Locality and Layout Contamination Summary Letter - DHL Stage 1 Part of 1953 - 2109 Elizabeth Drive, Badgerys Creek, NSW	 MGA	PROJ. #: 86548.20.R.008
	OFFICE: Macarthur	DRAWN BY: LAR			DRAWING No: 1
	SCALE: As shown	DATE: 24 July 2023			REVISION: 0



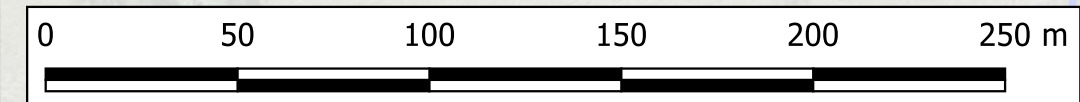
Legend

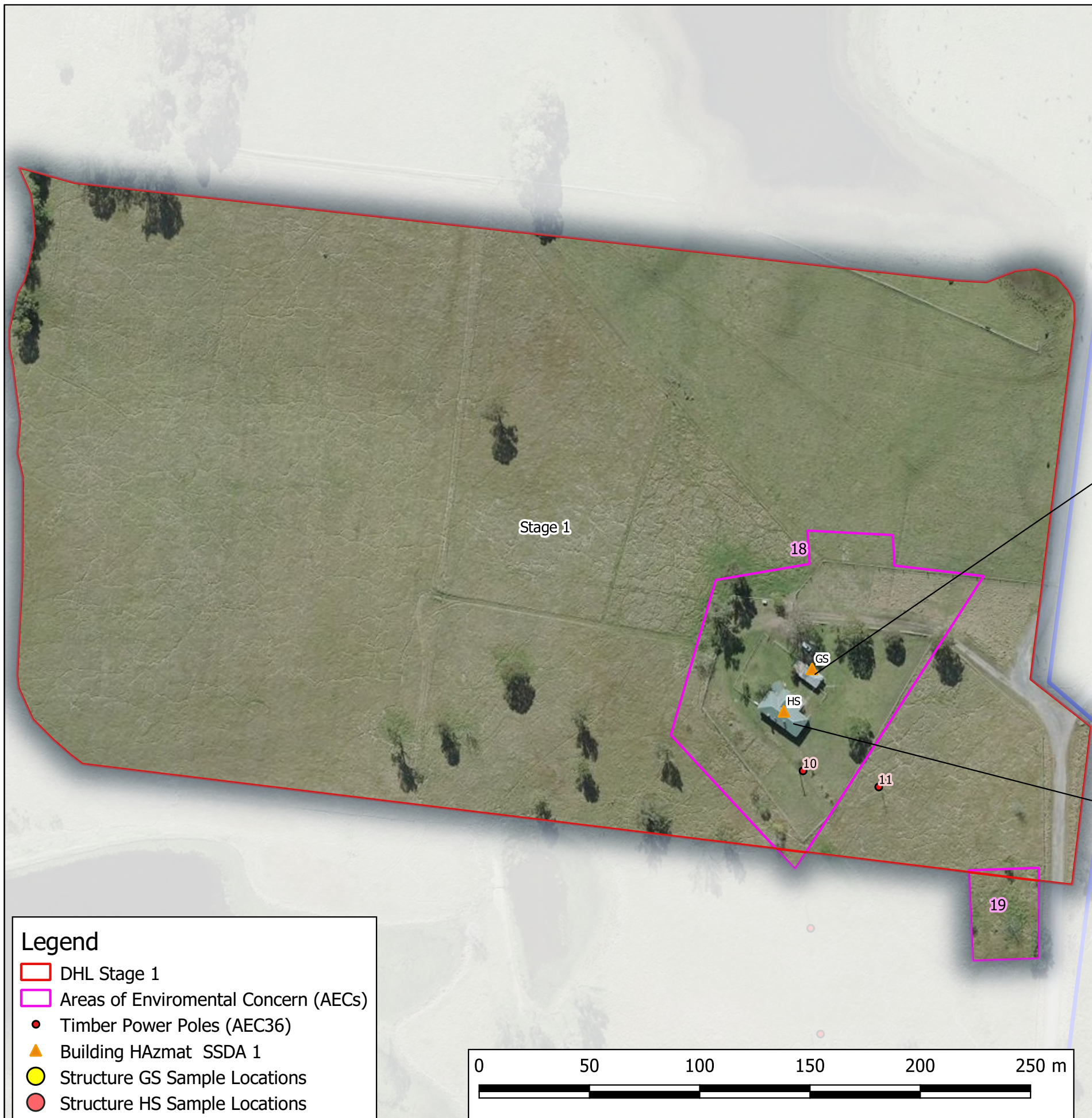
- DHL Stage 1
- DHL Site Boundary
- The Northern Gateway Boundary
- Areas of Environmental Concern (AECs)
- Timber Power Poles (AEC36)
- TP408 (Background areas) and TP591(AEC19)
- Hazardous Building Material



Legend

- DHL Stage 1
- Areas of Enviromental Concern (AECs)
- TP 408 (Background areas) and TP591 (AEC19)
- Timber Power Poles (AEC36)
- Further Investigation - Sampling Locations
- Trenches



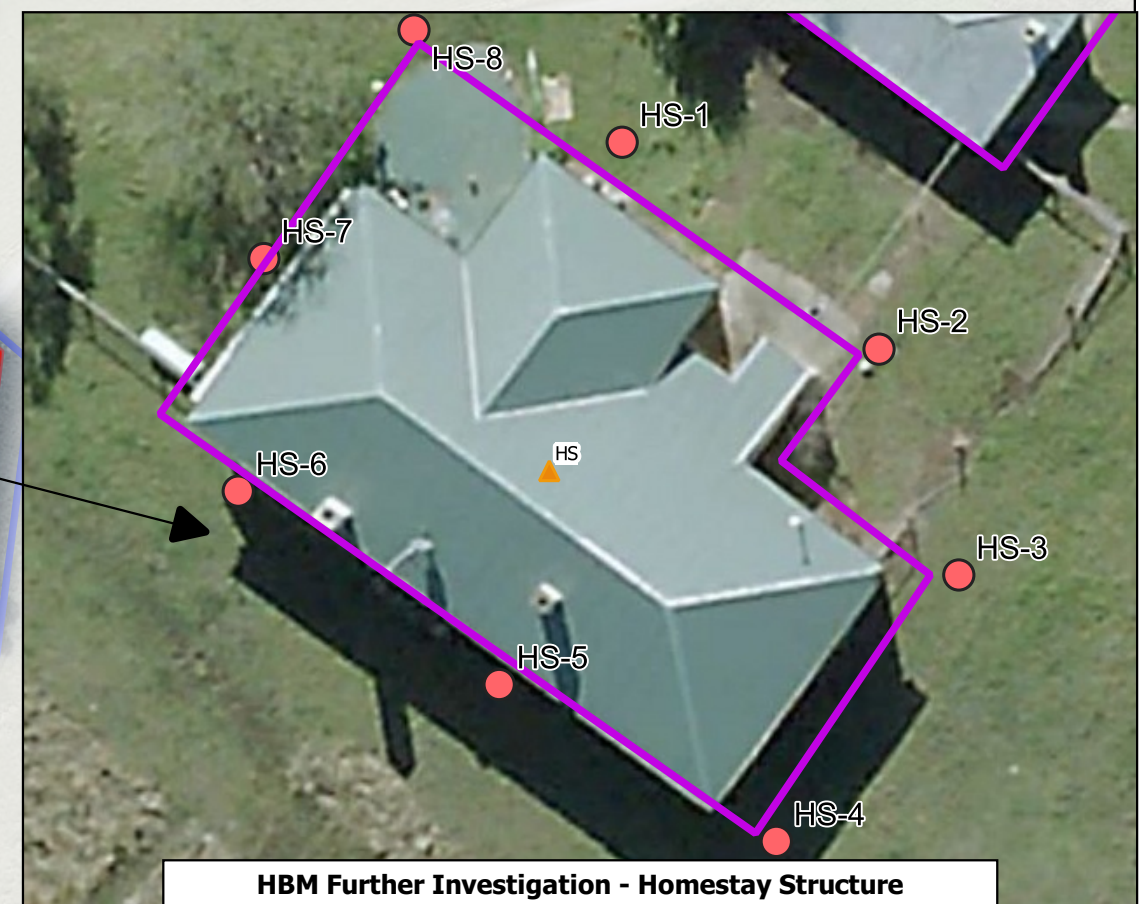


Legend

- DHL Stage 1
- Areas of Environmental Concern (AECs)
- Timber Power Poles (AEC36)
- ▲ Building Hazmat SSDA 1
- Structure GS Sample Locations
- Structure HS Sample Locations



HBM Further Investigation - Garage Homestay Structure



HBM Further Investigation - Homestay Structure

Introduction

These notes have been provided to amplify Douglas' report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

Douglas' reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Engagement Terms for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather

changes. They may not be the same at the time of construction as are indicated in the report; and

- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, Douglas will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, Douglas cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, Douglas will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, Douglas requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. Douglas would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

intentionally blank