

13 October 2022

Canberra Airport
Level 4, 21 Terminal Avenue
Plaza Offices
West Canberra Airport ACT 2609

Attention: Daniel Roy,

Subject: P22102 – Gap Analysis and Review of Contamination Risks, Denman Prospect Estate 2 – Stromlo Reach

Introduction

Lanterra Consulting Pty Ltd (Lanterra) was engaged by Canberra Airport to review the possible contamination risks for Denman Prospect Estate 2 – Stromlo Reach. The area that is the subject of this review is located within the Molonglo Valley Stage 2 area designated MV2-C1-A1 on Part Block 6 Section 2, Denman Prospect (herein referred to as the site). The area of the site was approximately 50 hectares (Ha). The location of the site is shown on **Figure 1**.

The site has been the subject of eleven (11) contamination investigations by various environmental consulting firms between 2005 and 2017 including:

- Coffey Geosciences (2005) 'ACT Planning and Land Authority, Molonglo Valley, Preliminary Geotechnical and Contamination Constraints Study'.
- AECOM Australia Pty Ltd (2011) 'Phase 1 Environmental Site Assessment, Stage 2 Molonglo (West), ACT'.
- AECOM Australia Pty Ltd (2012) 'Sampling and Analysis Quality Plan, Molonglo – Stage 2'.
- AECOM Australia Pty Ltd (2013) 'Phase 2 Environmental Site Assessment, Molonglo Stage 2; MV2-C1'.
- AECOM Australia Pty Ltd (2012) 'Sampling and Analysis Quality Plan for MV2-C1 AEC 11 Sheep Dip, Molonglo Valley, ACT'.
- AECOM Australia Pty Ltd (2014) 'Molonglo Valley MV2-C1 AEC-11 Former Sheep Dip Response to Interim Audit Advice (IAA) emailed 26 August 2014'.
- AECOM Australia Pty Ltd (2014) 'Additional Phase 2 Environmental Site Assessment, MV2-C1 AEC-11 Former Sheep Dip'.
- AECOM Australia Pty Ltd (2015) 'Beneficial Re-Use Letter for ACT EPA Approval; Stockpiled Materials at Molonglo Sheep Dip MV2-C1 AEC-11'.
- Douglas Partners Pty Ltd (2015) 'Report on Compliance with the Reuse of Stockpiled Material, Denman Prospect Stage 1A1, Molonglo Valley'.
- AECOM Australia Pty Ltd (2015) 'Remediation Validation Report, Former Sheep Dip, MV2-C1 AEC-11'.
- AECOM Australia Pty Ltd (2017) 'Addendum to Phase 2 Environmental Site Assessment Molonglo Stage 2; MV2-C1-A1'.

These investigations were the subject of an environmental audit by Ms Rowena Salmon which was completed in 2017 where it was concluded that the site was considered to be suitable for all permitted uses under the following zonings as detailed in the ACT Territory Plan 2008:

- RZ1 – Suburban (effective date 19 August 2016)
- CFZ – Community Facility (effective date 19 August 2016)

Since the completion of the Audit in 2017, it is understood that the following additional zones are to be added to the site to permit the proposed future development:

- RZ4: Medium Density Residential
- RZ5: High Density Residential
- CZ4: Local Centre
- CF: Community Facility
- PRZ1: Urban Open Space
- NUZ3: Hills Ridges and Buffers
- NUZ4: River Corridor
- TSZ1: Transport

As the Site Audit Statement from 2017 does not include the above zones, this gap analysis reviews the current site status and assesses whether the findings of the 2017 site audit statement (SAS) remain valid and if the site is suitable for the land uses permitted by the additional zones.

Objective

The objectives of the project were to:

- Assess whether there have been activities on the site since 2017 that may introduce contaminants onto the site.
- Assess whether the findings of the Site Audit Statement remain valid.
- Assess whether the site is suitable for the land uses permitted under the additional zones.

Scope of Work

The scope of work for the gap analysis would be as follows:

- Review the Site Audit Report to understand the contamination assessments completed and the outcomes of any remedial work that may have been completed on the site.
- Complete a review of aerial photographs of the site between 2017 and the present using available aerial photography at www.nearmap.com.
- Review of any assessment reports and EPA approvals for soil that has been imported onto the site (if necessary).
- Complete a site visit to assess the site for changes and possible areas of concern that may exhibit indications of contamination.
- If necessary, soil sampling would have been completed where suspected contamination may have been identified.

Review of Site Audit Report

The site audit report titled by Ramboll Environ Australia Pty Ltd titled 'Site Audit Report, MV2-C1-A1, Molonglo Stage 2, ACT' (dated 19 May 2017) was reviewed to gain an understanding of the site condition upon the completion of the Audit. This would form the baseline for assessing any changes

to the site from 2017 to the present. The environmental investigations that were completed and reviewed as a part of the site audit process were not available to Lanterra for review.

Through the investigations completed, the following areas of environmental concern were identified:

- Agricultural and forestry activities across the entire site. Identified contaminants of potential concern were heavy metals, organochlorine and organophosphate pesticides (OCP/OPP), triazine herbicides.
- AEC 11 comprising of a former sheep dip with concrete lined bath, concrete pads and adjacent holding yard/pen. Contaminants of concern that were identified were arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury, OCP and OPP.
- AEC 21 comprising of a farm dam collecting water from forestry/agricultural land, roads and tracks. Contaminants of concern included total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), heavy metals and metalloids, OCP/OPP.

The locations of these AECs are presented on **Figure 2**.

The analytical results of soil samples indicated that contamination associated with the former sheep dip was located in the vicinity of AEC 11 and through the sampling that was completed by AECOM, this did not represent a significant, widespread contamination problem and remediation of the sheep dip would make the site suitable for the proposed land uses.

Remediation of the sheep dip was completed where the following works were undertaken:

- Removal of approximately 4,000 litres (L) of water from the sheep dip. Water was placed into storage containers on the site prior to being disposed off-site by Transpacific.
- Three (3) remedial excavations were completed which comprised of the sheep dip and two (2) areas down topographic gradient of the sheep dip that had unacceptable concentrations of arsenic.
- Approximately 800 cubic metres (m³) of soil was excavated from the three (3) excavations and disposed from the site.
- Five (5) empty waste oil drums were also removed from the sheep dip area and the underlying soil was scraped and disposed off-site.

Validation sampling comprised of fifty-four (54) samples (including samples collected for quality assurance/quality control purposes) from the four (4) excavation areas and all results were below the adopted health based investigation levels for residential use (HIL A) and Ecological Investigation Levels (EILs) from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013) with the exception of one (1) sample where the concentration of arsenic was 115 mg/kg at a depth of 1.4-1.5 m below ground level.

Based on the validation data, the Auditor considered the sheep dip and excavation areas to have been adequately validated.

Analytical results of samples collected to assess the general condition of the soil across the site and the results were also below the adopted HIL A criteria.

A surface water sample collected from the dam which formed AEC 21 indicated that concentrations of copper and zinc slightly above the adopted ANZECC (2000) criteria which was applied at the time of the investigation. It is noted that this has been superseded by the Water Quality Guidelines (2018)

although the relevant criteria for copper and zinc are unchanged for the protection of 95% of aquatic species.

Based on the outcomes of the investigations completed, the Auditor concluded that the site was suitable for the purposes of residential with gardens accessible soil and other less sensitive uses. Therefore the site was considered suitable for the permitted land uses under the RZ1 – Suburban and CFZ – Community Facility zones.

Review of Aerial Photographs

To assess the changes to the site since the audit was completed in 2017, a review of the aerial photographs that were available on www.nearmaps.com. A summary of the aerial photograph review is presented in Table 1 below.

Table 1: Details of the Review of Aerial Photographs

Date	Source	Description of the Subject Site	Description of Surrounding Land
July 2017	Nearmap	The site is vegetated grassland. Unsealed tracks are located along the southern and northern boundaries. AEC21 (dam) is visible in the western section of the site and is approximately 70% with water. AEC11 (sheep dip) is located immediately east of the dam and the remedial excavations are clearly visible. Visible water is present in two of the excavations. To the south of the sheep dip excavations, a levelled area with three (3) small stockpiles of rock is present.	The Denman Prospect sub-division is visible to the southeast of the site, although no buildings have been constructed. To the east of the site, undeveloped grassland and forest is present.
July 2018	Nearmap	The site is essentially unchanged. AEC21 (dam) is dry, while only the easternmost excavation contains water.	No significant changes to the surrounding area and the Denman Prospect shops have been constructed.
July 2019	Nearmap	No significant changes to the site were noticeable. Vegetation around AEC11 (sheep dip) is increasing.	No significant changes to the surrounding area with the exception of apartment buildings and residential houses in Denman Prospect to the south.
June 2020	Nearmap	No significant changes to the site were noticeable. Vegetation around AEC11 (sheep dip) is increasing and there is water visible in the dam (AEC21).	No significant changes to the surrounding area with the exception of additional apartment buildings and residential houses in Denman Prospect to the south.
July 2021	Nearmap	No significant changes to the site were noticeable. Vegetation around AEC11 (sheep dip) is increasing.	More residential buildings have been constructed in Denman Prospect to the south. Trees have been cleared to the east.
July 2022	Nearmap	No significant changes to the site were noticeable with the exception of the Denman Prospect compound in the southeast corner of the site.	Further residential buildings have been constructed to the south of the site, while sub-division earthworks for the new Stage of Denman Prospect have commenced to the east of the site.

Based on the review of the aerial photographs, the site has not changed significantly since 2017 with the exception of the establishment of the Denman Prospect compound located in the southeast corner of the site. From the review of aerial photographs, the compound was established between October 2021 and December 2021 and a description of the compound is present in the section below.

Copies of the aerial photographs reviewed are presented as **Figure 3**.

Site Visit

A site visit was conducted on 7 September 2022 by a suitably qualified environmental consultant from Lanterra.

The Denman Prospect Compound was located in the south-eastern corner of the site and the following observations were made for the condition of the compound:

- The Denman Prospect Site Compound was located in the south-eastern corner of the site. The compound had been cut into the surface for levelling purposes and was surrounded by an earthen bund around the low side of the compound, while a drainage channel had been cut around the high side of the compound.
- The compound was secured with a 2 m high colour-bond fence with a lockable gate along the western side of the site.
- The surface of the compound comprised of a grey road base gravel. The compound had three (3) large shipping containers that was used for the storage of maintenance equipment. A 10 m³ skip bin was present on the site and appeared to be used for waste disposal purposes.
- While no mobile equipment was present, there was evidence that tractors or mowers were stored on the site. The compound was clean and well maintained and no visual or olfactory indications of contamination.

The sheep dip was located in the south-western portion of the site and the following observations were made during the site visit:

- The four (4) excavations from the remedial works in 2015 were still present. At the time of the site visit, there was water in the base of each excavation. The sides of each excavation had thick vegetation of grass and shrubs.
- Extended periods of rain had been experienced prior to the site visit and water was actively seeping into the excavations.
- No evidence of contamination were noted around the excavations.

The dam, which was AEC 21 was located to the west of the sheep dip. At the time of the site visit, the dam was full and appeared to have a healthy ecosystem with abundant aquatic plants in the dam and abundant frogs around the dam.

Through the centre of the site large areas of dead blackberry bushes were observed which may have been sprayed as a part of the Territory's noxious weed control program.

Overall, the condition of the site did not appear to have changed significantly since the completion of the Audit in 2017.

Future Construction Compound

It is understood that a new construction compound is to be established adjacent to the eastern boundary of the site as shown on **Figure 2**. The compound should not have any adverse impact on the suitability of the site for the permissible site uses, while it is inferred that upon the decommissioning of the compound upon completion of construction works in the future, a validation assessment would be completed to assess the suitability of the compound area for future use.

Summary and Conclusions

Based on the results of this assessment, there have not been any significant changes to the site that may introduce contaminants of concern that could alter the outcomes of the audit completed in 2017. The area where the sheep dip was located has not changed since remediation was completed in 2015 and no further sampling is considered necessary.

No indications of soil movement either onto or off the site were noted during the site visit or in the aerial photographs reviewed between 2017 and July 2022, while there no known soil assessment reports after 2017.

While there is a new compound used by Denman Prospect for the storage of maintenance equipment, the compound was in good condition and no visual or olfactory indications of potential contamination were noted. The compound is in operation and at present sampling of soil at the compound is not warranted. Should the compound be decommissioned in the future, then validation sampling is recommended to assess that activities have not impacted the soil within the compound.

Overall, the outcomes of the site audit completed in 2017 remain valid and the site is considered suitable the land uses that are permitted under the new zones to be added.

Limitations

The findings of the report were based on the Scope of Work outlined above. Lanterra has performed services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties express or implied, are made.

The assessment has been completed as a gap analysis to assess whether there have been any activities on the site that may alter the condition of the site. The gap analysis has been dependent on the reports that have been made available by the client and the observations made during the site visit.

The absence of any identified hazardous or toxic materials on the subject property should not be interpreted as a guarantee that such materials do not exist on the site. It is noted that due to the size of the site, small scale events such as illegal dumping may have occurred and remain undetected, however it is assumed that any such occurrences may be managed with an unexpected finds protocol.

While normal assessments of data reliability are made, Lanterra will not assume responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Lanterra, or developments resulting from situations outside the scope of this project.

Should you have any questions regarding the results of this assessment, then please do not hesitate to contact the undersigned.

Sincerely

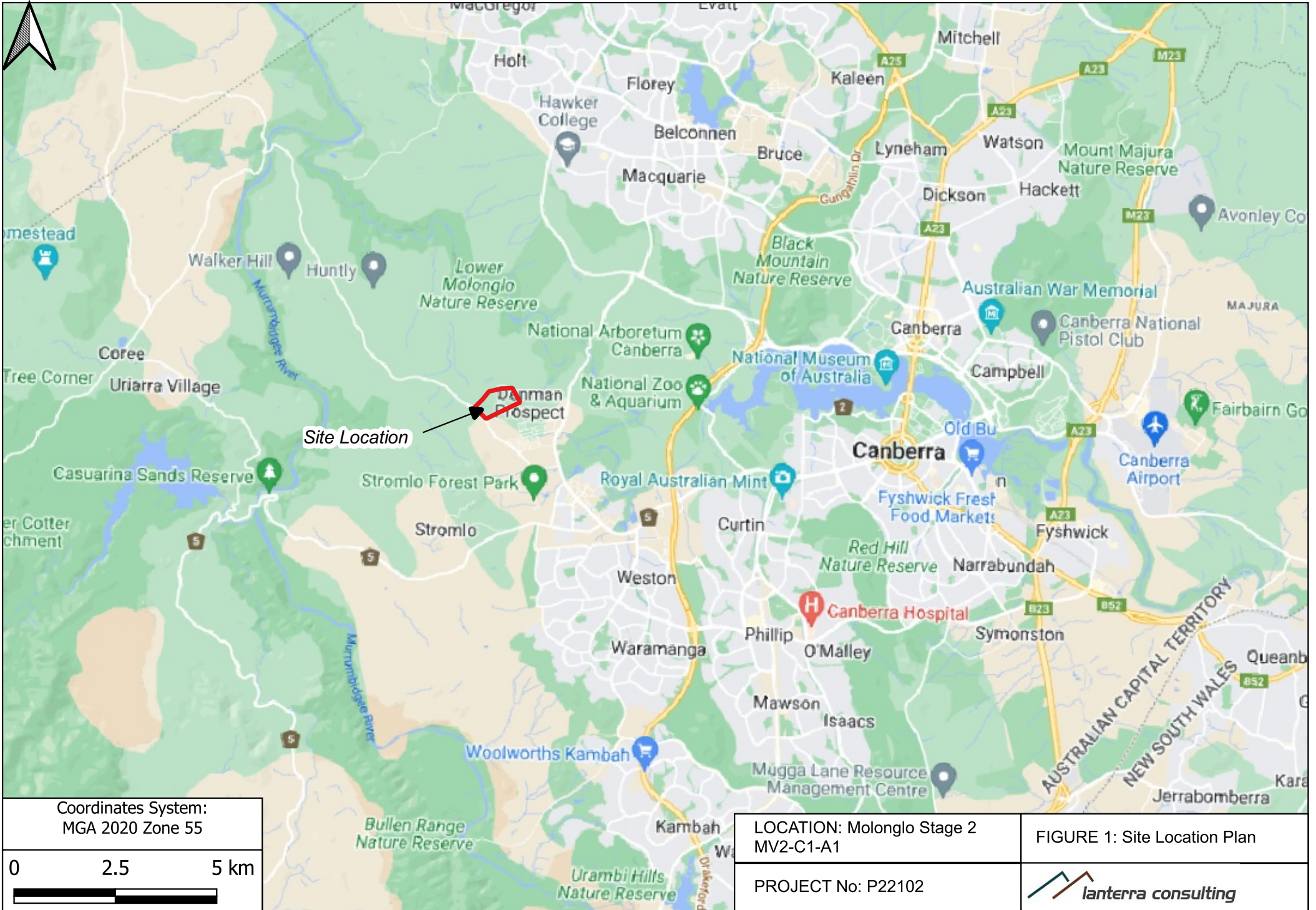
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Chris Gunton
Principal Environmental Scientist
0432 324 348

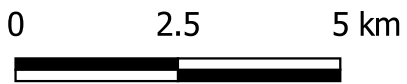
Attachments

Attachment A: Figures

Attachment A: Figures



Coordinates System:
MGA 2020 Zone 55

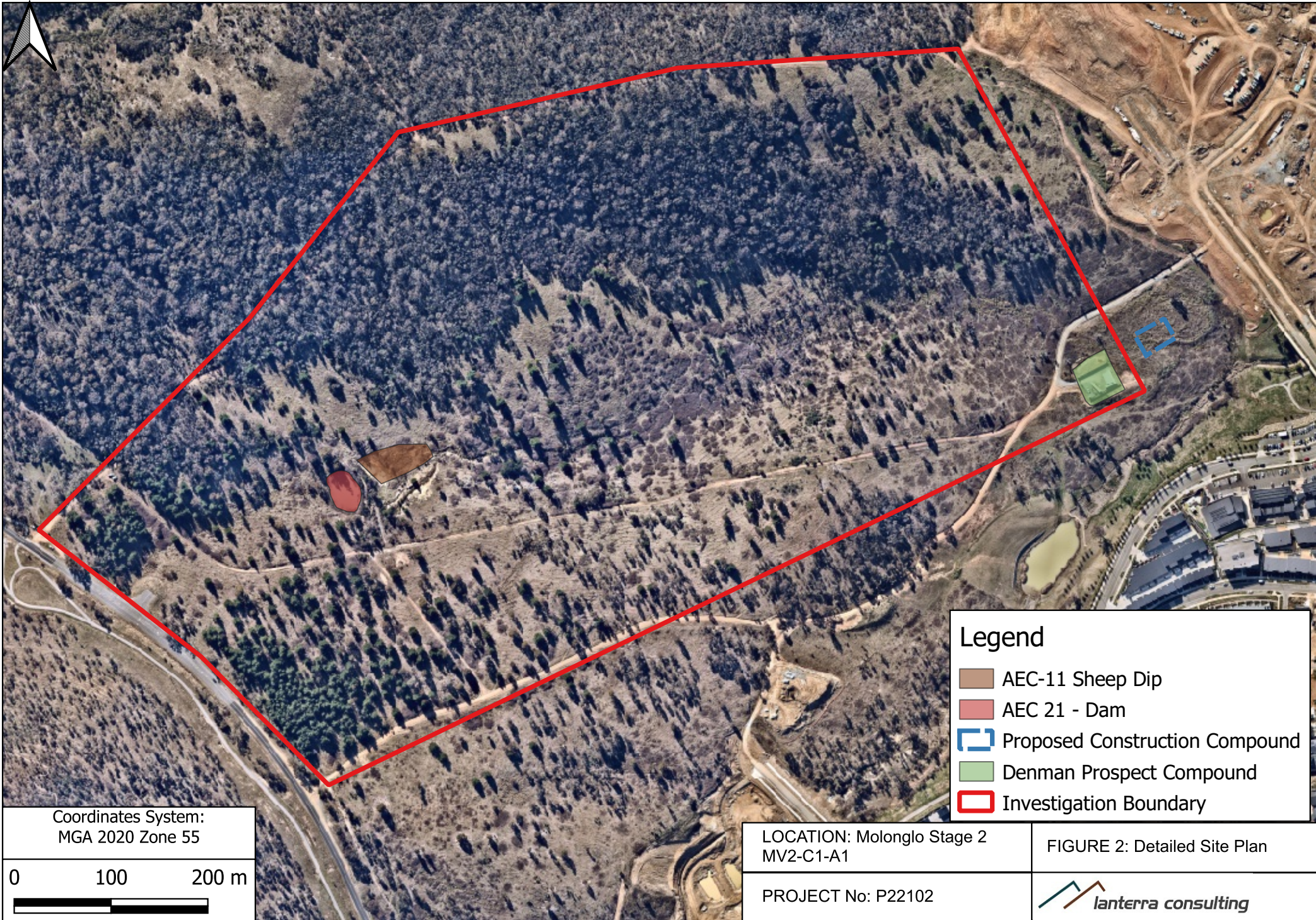


LOCATION: Molonglo Stage 2
MV2-C1-A1

PROJECT No: P22102

FIGURE 1: Site Location Plan





Legend

- AEC-11 Sheep Dip
- AEC 21 - Dam
- Proposed Construction Compound
- Denman Prospect Compound
- Investigation Boundary

Coordinates System:
MGA 2020 Zone 55

0 100 200 m






LOCATION: Molonglo Stage 2
MV2-C1-A1


FIGURE 2: Detailed Site Plan

PROJECT No: P22102





Legend	
	AEC-11 Sheep Dip
	AEC 21 - Dam
	Proposed Construction Compound
	Denman Prospect Compound
	Investigation Boundary

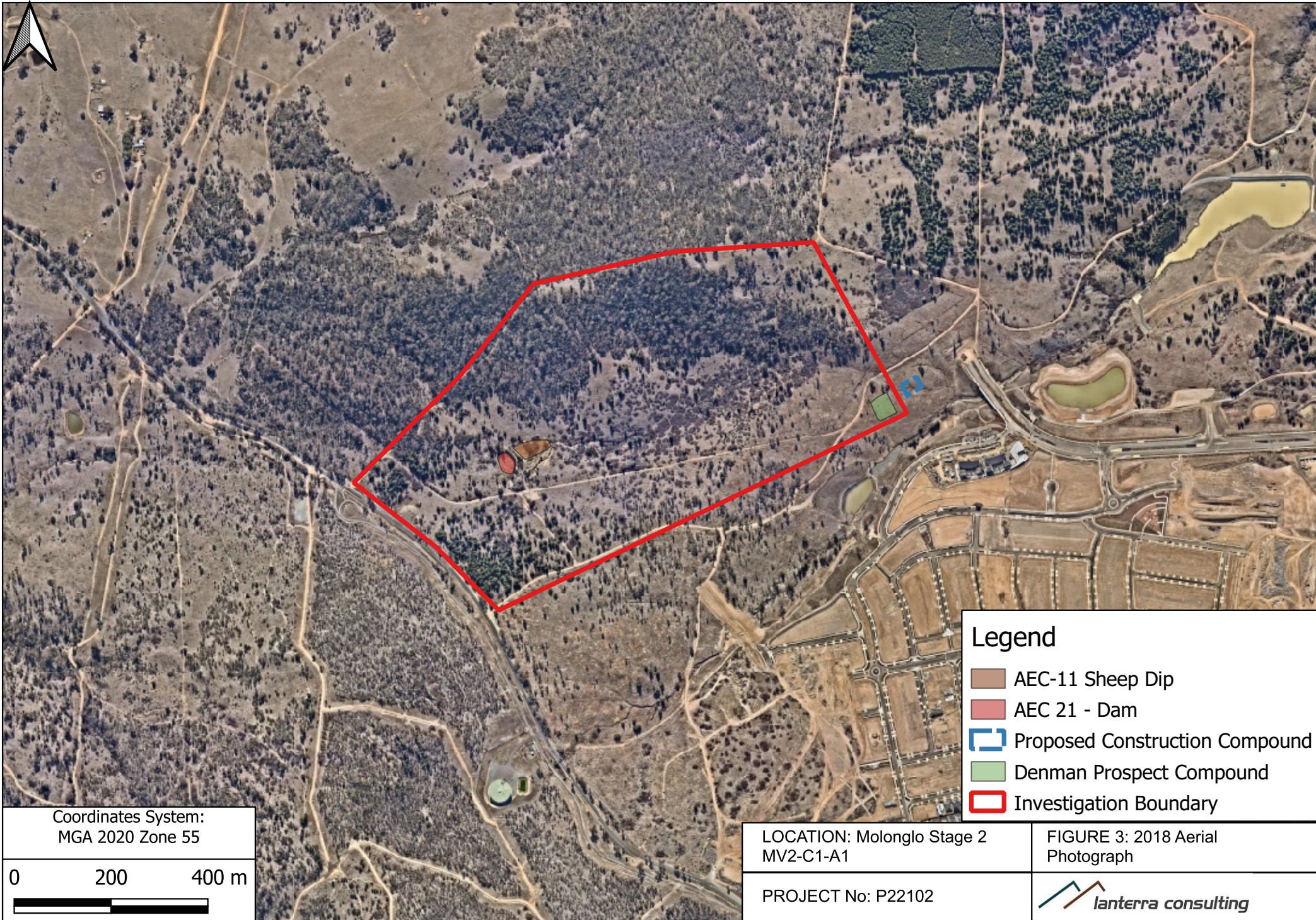
Coordinates System: MGA 2020 Zone 55		
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LOCATION: Molonglo Stage 2
MV2-C1-A1

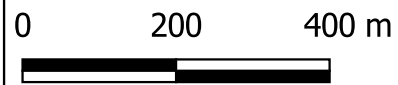
FIGURE 3: 2017 Aerial
Photograph

PROJECT No: P22102





Coordinates System:
MGA 2020 Zone 55



Legend

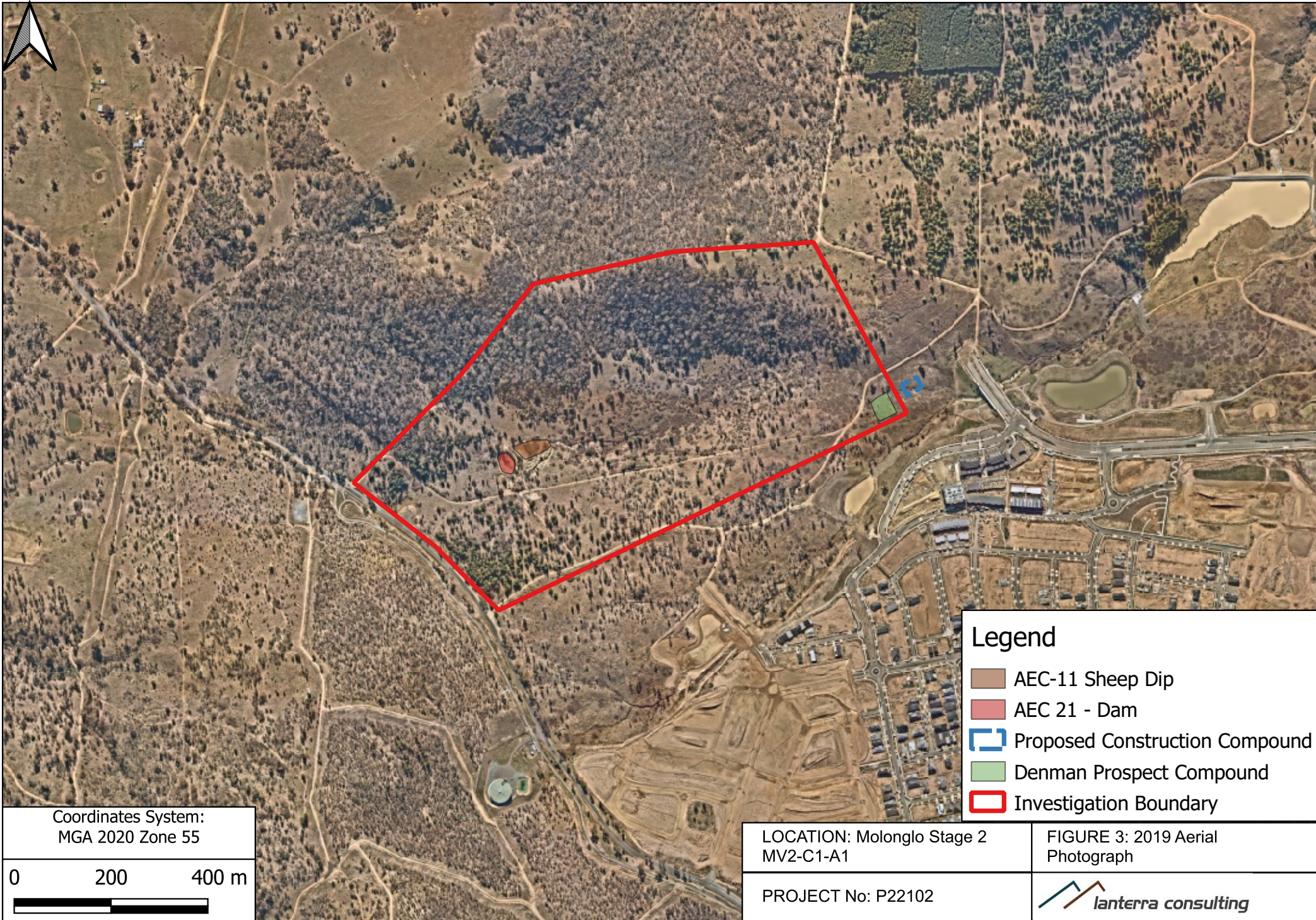
- AEC-11 Sheep Dip
- AEC 21 - Dam
- Proposed Construction Compound
- Denman Prospect Compound
- Investigation Boundary

LOCATION: Molonglo Stage 2
MV2-C1-A1

FIGURE 3: 2018 Aerial
Photograph

PROJECT No: P22102





Coordinates System:
MGA 2020 Zone 55

0 200 400 m



Legend

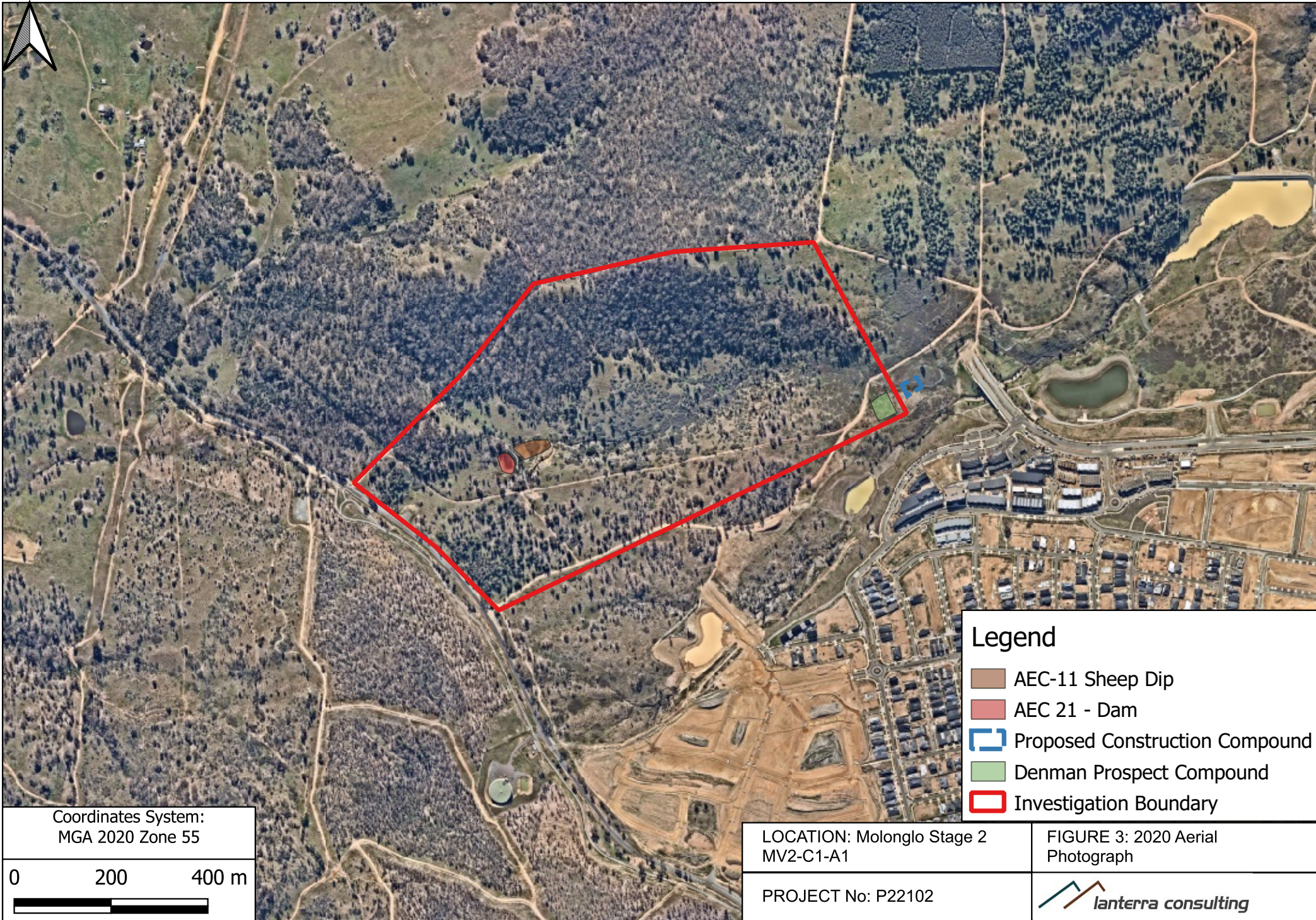
- AEC-11 Sheep Dip
- AEC 21 - Dam
- Proposed Construction Compound
- Denman Prospect Compound
- Investigation Boundary

LOCATION: Molonglo Stage 2
MV2-C1-A1

FIGURE 3: 2019 Aerial
Photograph

PROJECT No: P22102





Coordinates System:
MGA 2020 Zone 55

0 200 400 m



Legend

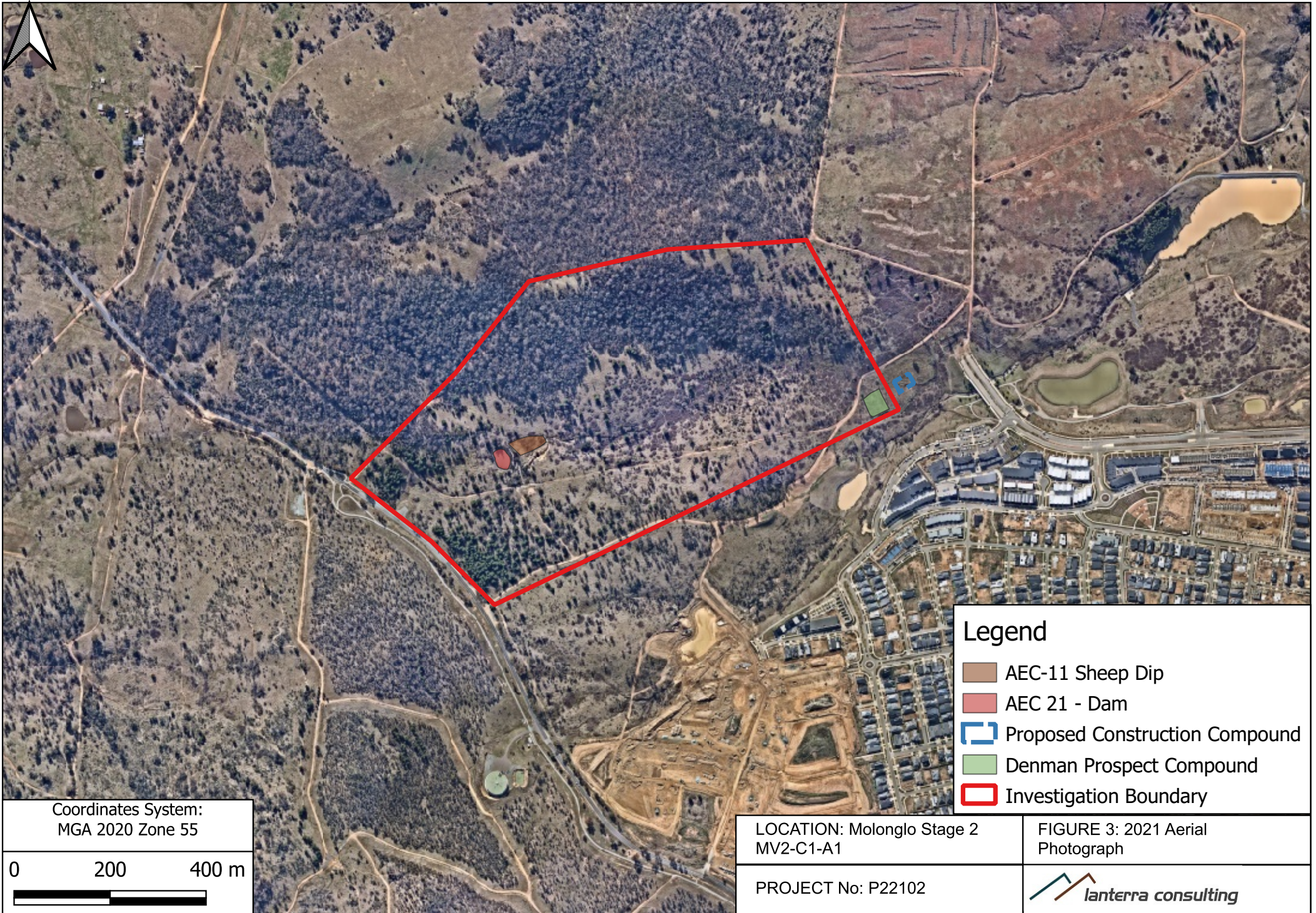
- AEC-11 Sheep Dip
- AEC 21 - Dam
- Proposed Construction Compound
- Denman Prospect Compound
- Investigation Boundary

LOCATION: Molonglo Stage 2
MV2-C1-A1

FIGURE 3: 2020 Aerial
Photograph

PROJECT No: P22102





Coordinates System:
MGA 2020 Zone 55

0 200 400 m



Legend

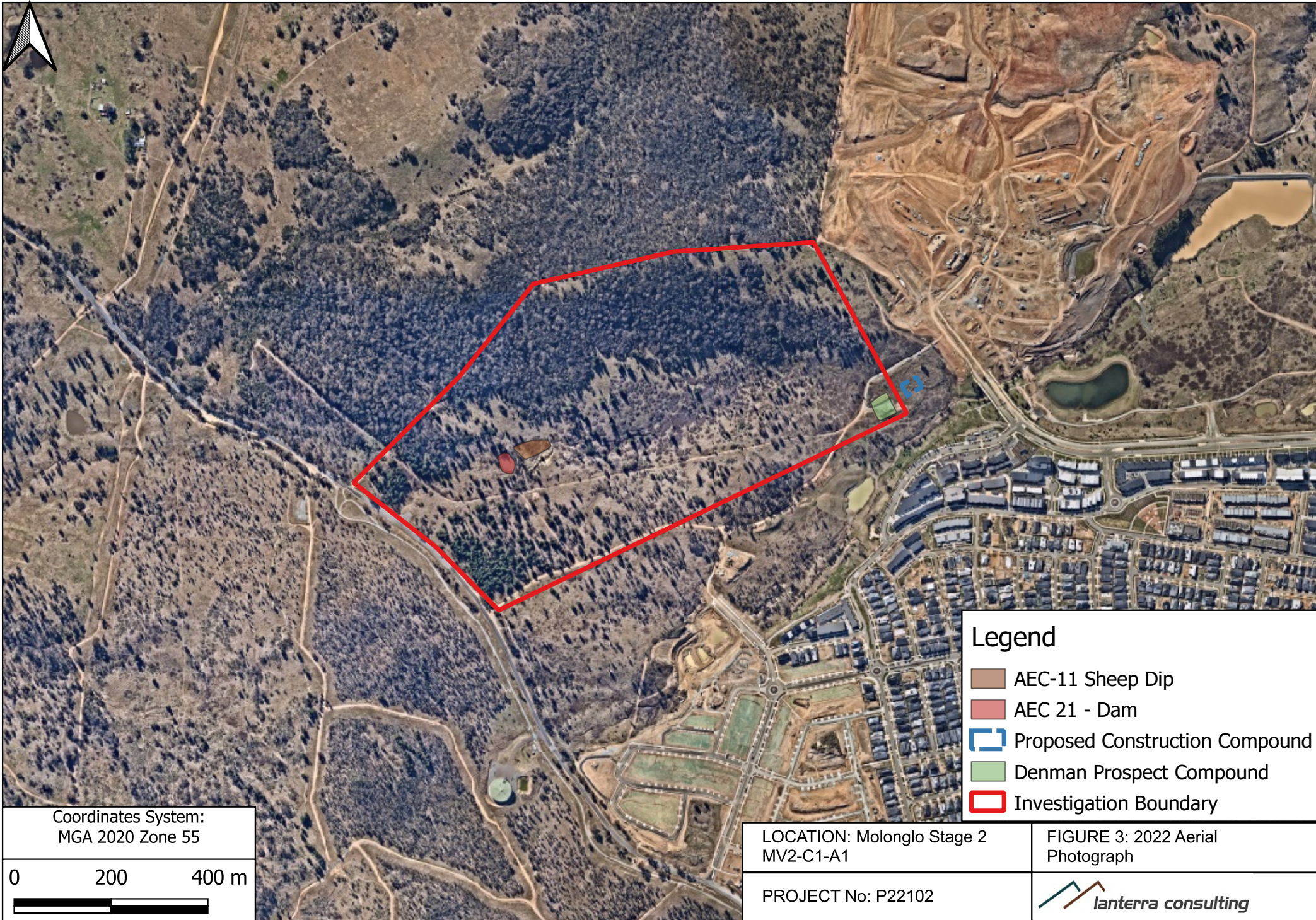
- AEC-11 Sheep Dip
- AEC 21 - Dam
- Proposed Construction Compound
- Denman Prospect Compound
- Investigation Boundary

LOCATION: Molonglo Stage 2
MV2-C1-A1

FIGURE 3: 2021 Aerial
Photograph

PROJECT No: P22102










Coordinates System:
MGA 2020 Zone 55

0 200 400 m

Legend

-  AEC-11 Sheep Dip
-  AEC 21 - Dam
-  Proposed Construction Compound
-  Denman Prospect Compound
-  Investigation Boundary

LOCATION: Molonglo Stage 2
MV2-C1-A1

FIGURE 3: 2022 Aerial
Photograph

PROJECT No: P22102

 lanterra consulting