

Addendum Report

Modification of a Determined Review of Environmental Factors

Mitigation Works – Wilsons Beach, Abrahams Bosom Reserve Currarong

Original (Current Review of Environmental Factors)

SF	REF Title	Determined by	Date Determined
1	Proposed Mitigation Works – Wilsons Beach, Abrahams Bosom Reserve Currarong	Graham Paull (Acting) Manager Built Assets	30/01/2024

Addendum Report

Stage	CL position	Contact person	Date finalised
Prepared by		Deryk Engel Director Lesryk Environmental Pty Ltd	16/08/2024
Approved by	Manager Built Assets	Eddie Love	20/8/24

1. Overview

Current activity as determined under the EP&A Act

Erosion impacts, associated with channelised surface runoff during heavy rainfall periods, are having an effect on the access track to Wilsons Beach, within Abrahams Bosom Reserve. These impacts pose a risk to pedestrian safety and a registered Aboriginal midden (AHIMS #58-2-0054). Key features of the approved works include:

- A project area approximately 20 metres (m) x 5 m in size, comprising the northern point of the Abrahams Bosom Walking Track as well as the disturbance footprint
- A project area which includes the area around an existing metal staircase and the Aboriginal shell midden:
 - to protect the midden, Crown Lands proposes to lay down geofabric textile (or similar) material with fill (likely clean sand) placed over the top
- Temporarily fenced site compound located in the car park at the entrance to Abrahams Bosom
- Site access for personnel to the project area from the carpark
- Use of a helicopter to deliver materials to site
- Removal of the existing metal staircase, this consisting of six stairs and associated poles that are attached to sandstone boulders. The staircase will be cut it into manageable pieces with an angle grinder and transported offsite by hand.

In preparing the *Review of Environmental Factors: Proposed Mitigation Works – Wilsons Beach, Abrahams Bosom Reserve, Currarong* (hereafter referred to as the 'original REF'), the area investigated and considered is identified in Figure 1.

In preparing the original REF, all portions of the proposed work areas were investigated on foot by personnel from Lesryk (refer to Section 6.1.2, page 40 of the original REF).

The original REF prepared to assess the proposed Abrahams Bosom Reserve Mitigation Works within Wilsons Beach, Abrahams Bosom Reserve was determined by Crown Lands on 30 January 2024.

Proposed modification to activity

The proposed modification to the approved activity is the use of a small bobcat (skidsteer) and/or utility vehicle to deliver materials, personnel and so forth to site along the Abrahams Bosom Walking Track and Wilsons Beach access track, as opposed to

delivering materials by helicopter, retention of the existing steel staircase and the establishment of Mat Rush (*Lomandra* sp) within several of the sandbags to provide vegetation cover.

To achieve the work proposed:

- An approximate 150 trips via small bobcat and/or utility vehicle, these conducted along the existing Abrahams Bosom Walking Track and Wilsons Beach access track, to deliver materials and personnel (e.g., sandbags, geo fabric, clean fill) to site is required.

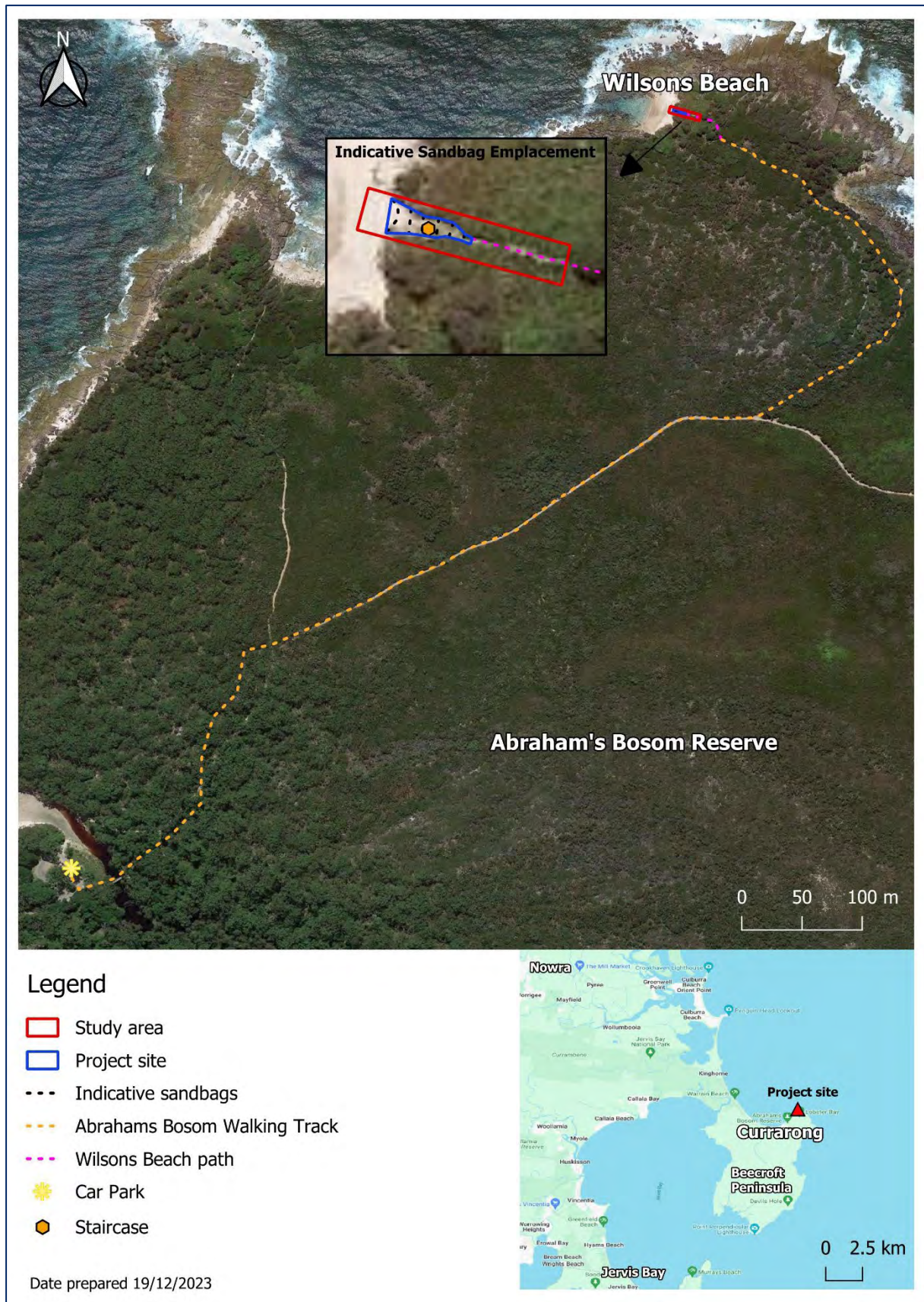


Figure 1. Location of the activity

Justification for the modification

Abrahams Bosom Walking Track was included in the initial disturbance footprint for the proposal to permit pedestrian access only. The modification of an anticipated 150 trips by a small bobcat/utility vehicle along this to deliver materials to site requires assessment of potential impacts.

Planting of Mat Ruch to promote site stabilisation.

2. Modification of equipment used

2.1 The current review of environmental factors

The approved REF was prepared to consider and assess:

- The use of a helicopter to deliver materials to site
- The use of an angle grinder to cut the staircase into manageable pieces and transported these offsite by hand

In preparing the original REF, the following matters relevant to the activities associated with carrying out this methodology within the project area were considered and assessed:

- Section 2.3 (page 4) detailed the construction hours, and Section 2.9 (page 6) detailed the proposed commencement of the works was 7 May 2024, and estimated to take four weeks to complete.
- Section 2.4 (page 5) detailed that, based on a worst-case estimate, the proposed activities would have a maximum disturbance footprint of about 0.024 ha with an adopted buffer of about 3 m.
- Section 2.4.1.1 Proposed Construction Methods (page 5)
 - The original REF details the set up of a site compound in existing hardstand areas (i.e., car park)
 - Temporary barricades/fencing would be erected (for the duration of the construction period) to delineate work areas, including temporary signage as required
 - Temporary erosion and sediment controls in-line within the prepared Erosion and Sediment Control Plan (ESCP)
 - Installation and maintenance of environmental mitigation measures identified in the original REF

- Delivery of materials by hand from the site compound or via helicopter
- Construction work involved angle grinding the steel staircase into carryable pieces, and the placement of sandbags onto a geofabric layer over the Wilsons Beach access track.
- Section 2.4.1.3 Earthworks or site clearing including extent of vegetation to be removed (page 5):
 - The original REF detailed the proposal would not require excavation to permit the placement of the geotextile fabric beneath the sandbags
 - Minor earthworks would be associated with the removal of the steel staircase
 - All earthwork activities would be in accordance with the prepared Construction Environmental Management Plan (CEMP) and ESCP (to limit soil erosion and sediment transfer off-site)
 - No native vegetation clearing, including mature trees, would be required to permit the work within the area assessed
 - Temporary stockpiles will be treated in accordance with *Managing Urban Stormwater: Soils and Construction* (the 'Blue Book') (Landcom 2004).
- Section 2.5 (page 6) included angle grinder and “helicopter or skidsteer” among the construction equipment and materials.
- Section 2.6 Ancillary facilities (page 6)
 - The original REF anticipated the need for a temporary site compound/stockpile site to be located within an existing hardstand area (i.e., existing car park at the entrance of Abrahams Bosom), being level ground and previously disturbed, and negating the need to remove vegetation beyond that assessed for to permit the proposed activity.
 - The Abrahams Bosom Walking Track and Wilsons Beach access tracks will be utilised by personnel to reach the site on foot; however, materials were to be delivered to site by helicopter. Therefore, limited impacts to the access track were anticipated.
- Section 2.7 and 2.8 (page 6) detailed that no public utility adjustment or property acquisition was required to permit the proposed work.

2.2 The scope of the modification

2.2.1 Modification description

The proposed use of a small bobcat (skidsteer) and/or utility vehicle to deliver material to site requires the utilisation of Abrahams Bosom Walking Track and Wilsons Beach access track. Abrahams Bosom Walking Track was not included in the initial disturbance footprint for the proposal and was not surveyed during the 16 November and 2 December 2023 field investigation.

It is acknowledged that Lesryk has subsequently prepared the following document - REF: *Proposed Risk Mitigation Works – Gosangs Tunnel and Mermaid Inlet, Abrahams Bosom Reserve, Currarong*, and, as part of that proposal, assessed the Abrahams Bosom Walking Track and recorded the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and NSW *Biodiversity Conservation Act 2016* (BC ACT) listed threatened Villous Mint-bush (*Prostanthera densa*) alongside this.

To achieve the scope of work modification that is proposed:

- Mat Rush seedlings to be established within several of those sandbags being used to stabilise the site.
- An approximate 150 trips via small bobcat and/or utility vehicle, these conducted along the existing Abrahams Bosom Walking Track and Wilsons Beach access track, to deliver materials and personnel (e.g., sandbags, geo fabric, clean fill) to site is required.
- Given the small size (width) of the bobcat and utility vehicle, and as all movement will be within the existing track footprint, no damage to, or removal of, trackside vegetation will occur.

The change in methodology from that addressed in Section 2.1 (above) in-line with the modification is as follows:

- Standard construction times in accordance with the Environment Protection Authority's *Draft Construction Noise Guideline* (NSW EPA 2020) will remain as documented in the original REF; however, the proposed commencement date of the works has passed.
- The original 0.024 ha disturbance footprint of the mitigation work at Wilsons Beach, still with an adopted buffer of 3 m, remains unchanged. However, disturbance of Abrahams Bosom Walking Track and Wilsons Beach path were not included in this initial disturbance footprint; therefore, based on a worst-case estimate, the maximum disturbance footprint of the proposed activities would increase to about 0.32 ha, inclusive of:
 - 777 m length of Abrahams Bosom Walking Track (this currently about 3 m wide) – 2331 m²

- 396 m length of Abrahams Bosom Walking Track (this currently about 2 m wide) – 792 m²
- 40 m length of Wilsons Beach path – 40 m²
- Wilsons Beach mitigation works – 24 m²
- Components of the proposed construction methods (Section 2.4.1.1 of the original REF) would be applicable to the proposed modified activities, with the exception of now retaining the staircase (no work required on this) and no longer requiring use of the helicopter.
- Components of the proposed earthworks or site clearing including extent of vegetation to be removed (Section 2.4.1.3 of the original REF) would be applicable to the proposed modified activities, with the exception that minor earthworks are no longer required in association with the staircase (to be retained), and minor disturbance of Abrahams Bosom Walking Track will occur to permit the use of a small bobcat/utility vehicle.
 - No native vegetation removal is required to permit the use of Abrahams Bosom Walking Track.
- Works/disturbance within the project and/or study area would utilise the same equipment and machinery as detailed in the original REF, with the exception of an angle grinder and helicopter. It is noted “skidsteer” was included in the original REF.
- Components of the identified temporary compound/stockpile site proposed to be used (Section 2.6 of the original REF) would be applicable to the proposed modified activities.

In the original REF it was acknowledged the access tracks will only be utilised by personnel to reach the site on foot. While a modification is proposed to use a small bobcat/utility vehicle along the track, it still remains that limited impacts to the access track are anticipated.

The abandoned use of the helicopter and retention of the existing steel staircase do not have any negative or adverse repercussions.

Category of modification

Category of modification referenced from National Parks and Wildlife Service modification to an approved REF Addendum report process.

<i>Category</i>	<i>Description</i>	<i>Action</i>	<i>Impact Risk</i>
-----------------	--------------------	---------------	--------------------

<p>A</p>	<p>Administrative modification to correct a minor error, misdescription or miscalculation in the instrument of the REF determination.</p> <p>Remains substantially the same activity.</p>	<p>Briefing note with revised determination notice.</p>	<p>Negligible</p>
<p>B</p>	<p>Negligible modification as a minor variation to the activity description or method, work, application or equipment used that will result in either a positive or static environment benefit or negligible variation in the level of environmental impact that is virtually undetectable.</p> <p>Remains substantially the same activity.</p>	<p>Briefing note to determining authority with REF Addendum Report and revised determination notice referring to the modification.</p>	<p>Negligible</p>
<p>C</p>	<p>Minor modification as a variation to the the activity description that involves a change in, extent, method or work that will result in a detectable increase in environmental impact that is not considered minor but is likely to be of low environmental risk, or a variation that requires consultation with a concurrent authority or a review/reissue of an approval or authorisation under the NPW Act or another State or Commonwealth Act.</p> <p>Remains substantially the same activity.</p>	<p>Briefing note to determining authority with REF Addendum Report, revised technical reports and revised determination notice (referring to the modification and with highlighted changes to conditions).</p>	<p>Minor</p>
<p>Refer to Area Manager</p>	<p>All other modifications as modifications that are not substantially the same development, requires reassessment of permissibility, or notably increases the scope of the activity, or magnitude of likely risk that may be significant or adverse in nature.</p> <p>Area Manager to direct proponent (internal or external) that a new REF is required.</p>	<p>A new Review of Environmental Factors</p>	<p>Moderate to Significant</p>

With reference to the above, the proposed modification is considered a Category C ‘minor’ modification as it remains substantially the same activity considered and assessed in the original REF; however, there is a variation to the activity description that involves a change in, extent, method or work that will result in a detectable increase in environmental impact that is not considered minor but is likely to be of low environmental risk.

Reference to Figure 1 in the original REF (as reproduced as Figure 1 of this Addendum Report) notes the initial proposed work in the vicinity of Wilson Beach, and indicates the alignment of Abrahams Bosom Walking Track, as part of the original scope of work.

Data searches and mapping (e.g. BioNet, Fisheries NSW Spatial Portal) documented within the original REF encompass the study area (for example Figures 2 - 5, 7 - 8); however, vegetation mapping does not incorporate Abrahams Bosom Walking Track.

The ecological and heritage studies conducted during the course of the original REF included aspects of the areas to be 'disturbed' as part of the proposed modification, although the ecological studies were not as comprehensive, as Abrahams Bosom Walking Track was initially to be used to permit pedestrian access only.

It is noted that, post-work, the modified study area would essentially reflect its current condition, with improvements to Wilsons Beach access track. The works would result in the preservation and conservation of significant landscape, biodiversity and cultural heritage values.

As documented in the original REF, the works proposed would address the erosion of the existing Wilsons Beach track, thereby providing an improved, compliant, and desirable level of infrastructure and service, better accommodating current and future visitor expectations.

2.2.2 Scope of modification to REF

Table 1 – Modification table

Reference	Current provision	Modified provision	Environment Value
<i>Section 1 of approved REF</i>	To remediate a 20 m x 5 m size area at the northern point of Wilsons Beach access track to protect AHIMS #58-2-0054, including the removal of a steel staircase. A helicopter would deliver materials to site.	To remediate a 20 m x 5 m size area at the northern point of Wilsons Beach access track to protect AHIMS #58-2-0054. The existing staircase is to be retained. Materials will be delivered to site via a small bobcat (skidsteer)/utility vehicle along the approximate 996 m long Abrahams Bosom Walking Track, as opposed to use of a helicopter.	An increase of the maximum disturbance footprint of the proposed activities to about 0.32 ha (from the original 0.024 ha), still with an adopted buffer of about 3 m. The presence of a threatened plant alongside Abrahams Bosom Walking Track; however, no vegetation removal is required to permit the scope of works.

Conclusion/Justification provided

Abrahams Bosom Walking Track was included in the initial disturbance footprint for the proposal to permit pedestrian access only. The modification of an anticipated 150 trips of a bobcat/utility vehicle along this to deliver material to site requires assessment of potential impacts on the track.

2.2.3 Substantially the same activity

The proposal is substantially the same activity, with the exception being to now retain the existing steel staircase, and a modification in the delivery of materials to site. The abandoned use of the helicopter and retention of the existing steel staircase do not have any negative or adverse repercussions.

Abrahams Bosom Walking Track was included within the original REF — to be utilised to only permit pedestrian access to site. As such, with the provision of recommended mitigation methods, there was no original requirement to comprehensively survey the length of the track. Subsequent vegetation mapping and consideration of biodiversity values has been conducted and is addressed within Section 4 of this Addendum REF; however, as no vegetation is required to be removed to permit the use of a small

bobcat/utility vehicle along Abrahams Bosom Walking Track, the proposed modification is considered to essentially align with the biodiversity outcomes of the original REF.

The conducting of the works assessed and approved in the original REF were aimed at protecting and conserving biodiversity and cultural heritage values, providing an improved, compliant, and desirable level of infrastructure and service, better accommodating current and future visitor expectations. The works assessed in this Addendum are consistent with this aim.

2.2.4 Statutory concurrence and consultation requirements

The proposed modification does not alter statutory concurrence or consultation requirements.

2.2.5 Statutory approvals affected by the modification

No statutory approvals are affected by the proposed modification.

2.2.6 Economic viability of the modification

The use of a small bobcat/utility vehicle, as opposed to use of a helicopter, is more economically viable in regards to fuel consumption.

3. Statutory considerations

3.1 Environmental Planning & Assessment Act 1979

The proposed modification activities would still comply with the EP&A Act and any relevant environmental planning instrument.

3.2 Crown Land Management Act 2016

The proposed modification activities would still comply with the CLM Act.

3.3 Other State or Commonwealth legislation considered

The proposed activities would not affect the application of any aspect of the statutory and planning framework assessed in Section 4 of the original REF.

4. Impact assessment

4.1 Natural Values

4.1.1 Biodiversity

Modification

A renewed site inspection of the study area was not required as Lesryk, subsequent to the original REF, surveyed Abrahams Bosom Walking Track as part of the preparation for the assessment report: *REF: Proposed Risk Mitigation Works – Gosangs Tunnel and Mermaid Inlet, Abrahams Bosom Reserve, Currarong*. Where applicable, results from this have been drawn on and incorporated in to this Addendum REF.

Section 6.6.1.2 of the original REF identified one mapped Plant Community Type (PCT) in the study area, being Shoalhaven Rockplate Heath (PCT 3809) with an existing distribution of 1509 ha. The original field survey confirmed that the vegetation mapping is accurate. Subsequent mapping with reference to the NSW State Vegetation Type Map (SVMT) (release C2.0M2.0) (State Government of NSW and NSW DCCEE 2023) identified the following additional PCTs along Abrahams Bosom Walking Track (Figure 2):

- Coastal Sands Apple-Blackbutt Forest (ID #3544)
- Coastal Sands Swamp Mahogany Rush Forest (ID #3986)
- Spinifex Strandline Grassland (ID #3410).

Of these, PCT 3986 conforms to the EPBC and BC Act listed threatened ecological communities (TEC); however, as determined in the original REF, as no vegetation removal is required to permit the proposal (including to permit access along the walking track), the proposed activity would have negligible impacts on the PCTs or TECs present.

Section 6.6.1.4 of the original REF identified 32 flora species that were recorded within the area investigated. Up to 104 species were recorded within the *Gosangs Tunnel and Mermaid Inlet* study area (incorporating Abrahams Bosom Walking Track). Not all will be present along the walking track; however, of these, one threatened species was observed along the walking track, being Villous Mint-bush – listed as Vulnerable under the EPBC and BC Acts. Sixty-five individuals were recorded along Abrahams Bosom (and Coomie's) Walking Track (Figure 3), which broadly aligns with previous BioNet records of the species in the locality.

Relevant to the proposal, Villous Mint-bush individuals were recorded in areas mapped as PCT 3544 – Coastal Sands Apple-Blackbutt Forest along the walking track.

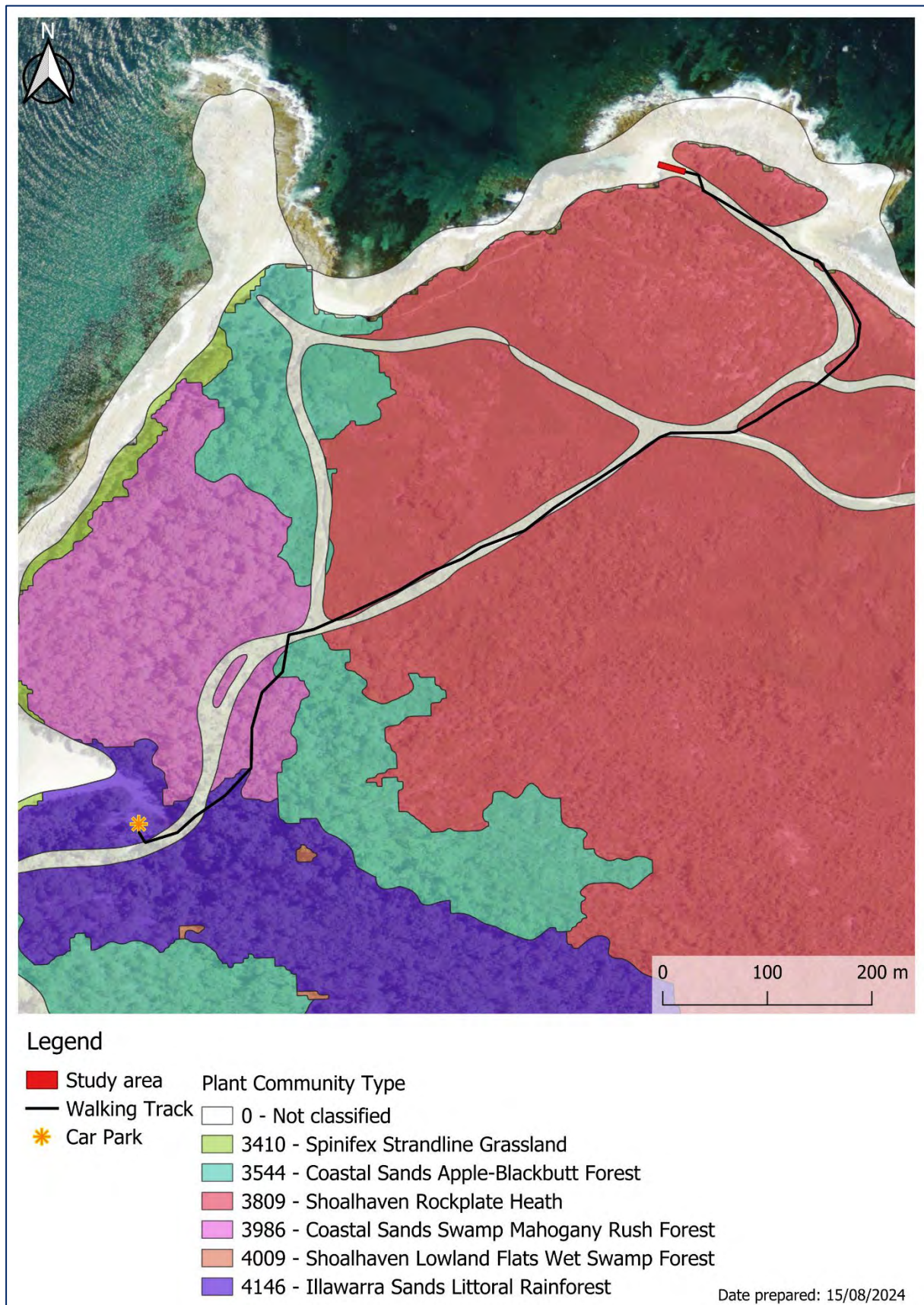


Figure 2. Vegetation mapping



Figure 3. Recorded Villous Mint-bush

In addition to the recorded threatened fauna species identified under Section 6.6.1.8 of the original REF, a new observation of the Eastern Osprey, and two extra sightings of the previously recorded Sooty Oystercatcher and Eastern Bristlebird, have been made in Abrahams Bosom Reserve (Table 2, Figure 4).

Table 2 – Recorded threatened fauna species

Common name	Scientific name	Status	Comment
Eastern Osprey	<i>Pandion cristatus</i>	Vulnerable – BC Act Migratory and Marine – EPBC Act	Species was observed flying overhead [E302252, N6123973] by Lesryk personnel while traversing Abrahams Bosom Walking Track.
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	Vulnerable – BC Act	One individual was observed on a rock shelf [approximately E303383, N6123996], about 860 m east of the study area.
Eastern Bristlebird – southern subspecies	<i>Dasyornis brachypterus</i>	Endangered – EPBC and BC Acts	Species was observed on the ground in adjacent bushes [E302056, N6123839] by Lesryk personnel traversing Abrahams Bosom Walking Track.

During the field surveys, no large stick nests were observed within any of the trees proximate to the study area, that could be utilised by the recorded Eastern Osprey. Therefore, while this species may traverse and/or forage over the study area, the Eastern Osprey is not considered to be roosting within the study area. The proposed activity would not directly or indirectly affect any breeding or foraging habitat relied on by the Eastern Osprey, such that its local presence would be compromised. As no significant

effect on the Eastern Osprey is likely, no assessments referencing s.7.3 of the BC Act and the EPBC Act Significant Impact Guidelines were considered necessary for this species.



Figure 4. Recorded threatened fauna species

The additional sightings of the Sooty Oystercatcher and Eastern Bristlebird do not have any further impact than assessed in the original REF. Similarly, the modification activities are not considered to have any adverse effect on the threatened fauna species recorded in the original REF. The proposed activity will take place within a disturbed and eroded environment and will not involve the removal of native vegetation; therefore, the works would not significantly impact any threatened species, ecological communities or migratory species listed under the BC Act, FM Act or EPBC Act.

Beyond the existing situation, the proposed modification will not present any additional barriers to the movement patterns of native species (nor plant propagule material). The works will not isolate or fragment any habitat areas and do not further contribute to, or increase the impact of, a Key Threatening Process as assessed within the original REF.

With reference to the NSW Department of Climate Change, the Environment and Energy's BioNet database (accessed August 2024 to ensure no 'new' species had been listed subsequent to the completion of the original REF) and listed in Appendix 8 of that document, it is not considered that any of the threatened plants or animals recorded within this portion of Abrahams Bosom Reserve would occur within the project and/or study area.

Mitigation measures

With reference to the mitigation measures for biodiversity impacts outlined in Section 6.1.4 and 6.6.4 of the original REF, the following are no longer applicable:

- Vegetation to be retained should be clearly marked and/or temporarily fenced before the commencement of construction works.
- Ensure the aircraft hovers over the site whilst delivering materials, with the landing site located offsite on an already established landing pad.

The other measures remain relevant and unchanged, with the addition of the following:

- Prior to the commencement of the proposed work, at the location where the threatened Villous Mint-bush population was recorded along the Abrahams Bosom Walking Track, a botanist, or similarly qualified personnel who are familiar with the species, will temporarily demarcate the confirmed locations of this species with temporary fencing, bunting or similar and delineate a 'no-go' exclusion zone for construction, vehicles and/or personnel.
- Identify the Villous Mint-bush records on site maps/plans to be provided to the proposed works contractor.

- Personnel will keep to the existing, previously disturbed alignment of the Abrahams Bosom Walking Track, particularly when using the small bobcat/utility vehicle through the recorded location of the Villous Mint-bush plants [to be delineated] so as to not impact the threatened species.

4.1.2 Environmental quality

Modification

There would be a minor change to the nature, likelihood and extent of impact as a result of the decision to employ the use of a small bobcat/utility vehicle to deliver materials to site, compared to the approved proposal.

The use of Abrahams Bosom Walking Track was identified for access in the original REF, therefore, a temporary reduction in visual amenity had been acknowledged; however, an approximate 150 trips via the bobcat/utility vehicle along this will result in an increased impact on the track, though this is considered to be minor and short term.

As is currently occurring, vehicle and machinery movements would be controlled by signage and spotters.

Mitigation measures

The mitigation measures outlined in Section 6.1.4 of the original REF remain relevant and unchanged.

4.1.3 Geodiversity, landform, soils and hydrology

Modification

There is no change to the soil description provided in the original REF; however the elevation of the topography increases from 10 m to 20 m Australian Height Datum.

The Acid Sulfate Soil mapping in the original REF encompassed the length of Abrahams Bosom Walking Track, identifying the whole of Abrahams Bosom Reserve within Class 5 land.

The modification does not involve additional earthworks.

Abrahams Bosom Walking Track is an existing, disturbed access route through the reserve; therefore, while the approximate 150 trips via the small bobcat/utility vehicle along the earthen Abrahams Bosom Walking Track (to deliver materials to site) will result in a minor, short-term increase of traffic along, and impact to, the track, this is not expected to have a significant adverse effect.

The use of Abrahams Bosom Walking Track will result in an increase of the maximum disturbance footprint of the proposed activities to about 0.32 (from the original 0.024 ha), still with an adopted buffer of about 3 m.

The presence of Abrahams Bosom Creek was identified in the original REF. Abrahams Bosom Creek is a third order stream and Class 3 watercourse (DPIRD n.d.), and intersects Abrahams Bosom Walking Track about 258 m in from Beecroft Parade.

The Department of Primary Industry and Regional Development's Fisheries NSW Spatial Data Portal [search: Southern Rivers] (DPIRD 2024) identifies Abrahams Bosom Creek as being KFH (see Figure 2 of the original REF). The use of Abrahams Bosom Walking Track (incorporating the timber bridge across the creek) will not have any direct or indirect impact on this waterway.

Mitigation measures

The principle of avoiding and minimising harm remains the same as outlined in the original REF and the mitigation measures outlined in Section 6.3.4 and 6.4.4 in the original REF remain relevant and unchanged.

4.2 Cultural Values

4.2.1 Aboriginal cultural heritage

Modification

The Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared by Apex Archaeology as part of the original REF identified AHIMS #58-2-0054 within the study area – being the shell midden the proposal seeks to protect from further degradation. To permit the work, Aboriginal Heritage Impact Permit (AHIP) 5251 has been approved.

In regard to the modification to retain the staircase, Crown Lands has advised they have received approval from Heritage that this does not require a variation to AHIP 5251; however, all work must remain in accordance with the works and procedures documented in the ACHAR and REF submitted with the AHIP application.

The retention of the staircase does not adversely affect the potential impact on Aboriginal archaeology and heritage provided in the original REF.

As the ACHAR was centred on Wilsons Beach, it did not directly take into account Abrahams Bosom Walking Track. However, a desktop basic search of the AHIMS Web Service (NSW Government 2024), conducted by Lesryk on 6 February 2024, revealed 43 previously recorded Aboriginal sites in a search area centred on Abrahams Bosom Reserve (Figure 5). An extensive search was then conducted to reveal the locations of

these AHIMS sites, relevant to the study area. The nearest sites to Abrahams Bosom Walking Track are presented in Table 3.

There are no known Aboriginal sites within the footprint of the Abrahams Bosom Walking Track. Provided pedestrian and bobcat/utility vehicle movements are limited to the existing track, there will be no adverse impact on nearby AHIMS sites.



AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Gosangs tunnel
Client Service ID : 861829

Lesryk Environmental Pty Ltd
20 Woodfield Ave
Bundeena New South Wales 2230
Attention: Deryk Engel
Email: admin@lesryk.com.au

Date: 06 February 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat. Long From : -35.0165, 150.8223 - Lat. Long To : -34.9989, 150.8532, conducted by Deryk Engel on 06 February 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

43	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. †

Figure 5. Basic AHIMS search

Table 3 – AHIMS site proximate to Abrahams Bosom Walking Track

AHIMS ID	Site name	Site feature/type	Distance from track
58-2-0040	Crookhaven Bight; Abraham's Bosom Beach	Shell : -, Artefact : - Midden	68 m north-west of the bridge, within the northern extent of the car park.
58-2-0049	Crookhaven Bight; Abraham's Bosom Creek	Shell : -, Artefact : - Shelter with Midden	14 m west of the walking track
58-2-0412	Abrahams Bosom 1	Artefact : -	44 m west of the walking track
582-0043	Crookhaven Bight; Abraham's Bosom Creek	Shell : -, Artefact : - Midden	11 m south-east of the bridge

Mitigation measures

The principle of avoiding and minimising harm remains the same as outlined in the original REF and the mitigation measures outlined in Section 6.7.4 in the original REF remain relevant and unchanged, with the addition of the following:

- To avoid impact to nearby AHIMS sites along Abrahams Bosom Walking Track, pedestrian and bobcat/utility vehicle movement is to remain wholly within the existing walking track (in order to access the subject site) and is not to venture beyond this.

As detailed above, it is acknowledged AHIP 5251 has subsequently been approved for the proposed work.

4.2.2 Historic heritage

Modification

There is no change to the non-Aboriginal archaeology and heritage description provided in the original REF, as there are no non-Aboriginal Heritage items likely in the footprint of the walking track.

Mitigation measures

The principle of avoiding and minimising harm remains the same as outlined in the original REF and the mitigation measures outlined in Section 6.8.4 in the original REF remain relevant and unchanged.

4.3 Social Values

Modification

As acknowledged previously, the modification to use a small bobcat\utility vehicle (instead of a helicopter) to make approximately 150 trips along Abrahams Bosom Walking Track (to deliver materials to site) will result in a minor, short-term increase of traffic along the track; however, with the exception of the abandoned use of the helicopter resulting in a decrease in noise impact, the use of a bobcat\utility vehicle will not alter amenity values (i.e., visual, noise, vibration, air quality, light) as assessed in the original REF. While use of an angle grinder is no longer required (that may have contributed to short-term dust and noise impact), other sources remain. As assessed in the original REF, these impacts will remain minor, short-term, temporary and only for the duration of the construction period.

The presence of sensitive noise receptors (i.e., residences) 60 m south of the Abrahams Bosom Walking Track was acknowledged in the original REF. Potential noise and visual impacts experienced by these, and use of the existing road network to access the site, would not change as a result of the modification.

There would be no new changes to reduction or degradation of primary resources, impact on tourism or reduced benefits for the broader community than those previously identified in the original REF.

Mitigation measures

Beyond the exclusion of helicopter related mitigation measures, the measures outlined in Sections 6.9.4, 6.10.4, 6.11.4, 6.12.4, 6.13.4 and 6.14.4 in the original REF remain relevant and do not need to be modified.

4.4 Crown Lands functions and operations

Modification

The modification of the proposed scope of work remains in accordance with Coastal Crown Land Guidelines, as identified under Section 2.10 of the original REF.

Mitigation measures

There are no new mitigation measures that need to be applied to avoid disruption to Crown Lands operations.

5. Conclusion

Modifications to the original scope of work being considered in this Addendum REF is:

- An approximate 150 trips via a small bobcat/utility vehicle along the Abrahams Bosom Walking Track and Wilsons Beach access track to deliver materials (e.g., sandbags, geo fabric, clean fill) to site.
- Retention of the existing steel staircase at Wilsons Beach
- The exclusion of a helicopter to deliver materials to site
- The inclusion of Mat Rush seedlings to stabilise portion of the site, these being planted into the imported Sandbags.

Abrahams Bosom Walking Track was not investigated during the course of preparing the REF for the project, though it was subsequently assessed as part of the preparation for the document referred to as: *REF: Proposed Risk Mitigation Works – Gosangs Tunnel and Mermaid Inlet, Abrahams Bosom Reserve, Currarong*.

As part of the original REF, an ACHAR was prepared and desktop and visual ecological assessments conducted. The sites in which these were conducted did not encompass Abrahams Bosom Walking Track; however, subsequent investigations and assessments as part of the *REF: Proposed Risk Mitigation Works – Gosangs Tunnel and Mermaid Inlet, Abrahams Bosom Reserve, Currarong* were drawn on to provide a complete evaluation of the study area.

Based on the outcomes of the database searches, literature reviews and ecological and heritage assessments subsequent to the original REF, within the area considered in this Addendum REF:

- Villous Mint-bush (Vulnerable, EPBC and BC Acts) was recorded alongside Abrahams Bosom Walking Track
- a further three PCTs were recorded, with one conforming to a TEC
- the threatened Eastern Osprey was detected, along with two additional sightings of the [previously recorded] threatened Sooty Oystercatcher and Eastern Bristlebird
- four AHIMS sites are located within 70 m of the walking track, the nearest being 11 m south-east of the track.

The additional disturbance footprint would not have a significant effect on the local viability of any species, populations, TEC or their habitats that are listed under the EPBC

or BC Acts such that they are placed at risk of extinction. Consideration of the presence of threatened species, adjacent TEC and nearby Aboriginal sites was given and appropriate mitigation measures for their protection and conservation presented in the original REF, with the following additional recommendations provided:

- Prior to the commencement of the proposed work, at the location where the threatened Villous Mint-bush population was recorded along the Abrahams Bosom Walking Track, a botanist, or similarly qualified personnel who are familiar with the species, will temporarily demarcate the confirmed locations of this species with temporary fencing, bunting or similar and delineate a 'no-go' exclusion zone for construction, vehicles and/or personnel.
- Identify the Villous Mint-bush records on site maps/plans to be provided to the proposed works contractor.
- Personnel will keep to the existing, previously disturbed alignment of the Abrahams Bosom Walking Track, particularly when using the small bobcat/utility vehicle through the recorded location of the Villous Mint-bush plants [to be delineated] so as to not impact the threatened species.
- To avoid impact to nearby AHIMS sites along Abrahams Bosom Walking Track, pedestrian and bobcat/utility vehicle movement is to remain wholly within the existing walking track (in order to access the subject site) and is not to venture beyond this.

As the proposal does not require removal of vegetation, and provided recommended mitigation measures are implemented, there will be no ecological constraints to the carrying out of the proposed work, and no impact on Aboriginal or historic heritage items. It is acknowledged AHIP 5251 has subsequently been approved for the proposed work.

The disturbance footprint of 0.024 ha from that described in the original REF will increase to 0.32 ha. The employed use of the small bobcat/utility vehicle results in a minor change to the nature, likelihood and extent of impact identified and assessed in the original REF; however, no residual impact is expected.

The works/disturbance within the project and/or study area would not have a significant effect on the environment such that an Environmental Impact Statement is required. The proposed works would have long term beneficial effects by addressing erosion impact and site safety, ultimately conserving environmental, cultural heritage and recreation values of this site.

6. Revised technical reports, Plans or designs

Attached as	Revised Document Title	Prepared by	Date
Appendix 1	Photographic record of Abrahams Bosom Walking Track	Lesryk	January 2024

7. Bibliography

Department of Primary Industries and Regional Development n.d., *Strahler Stream Order*, viewed August 2024.

- 2024, *Fisheries Spatial Data Portal* – Key Fish Habitat (Search: Southern Rivers), viewed December 2023.

Landcom 2004, *Managing Urban Stormwater: Soils and Construction* ('Blue Book') volume 1, 4th edition, Sydney.

Lesryk Environmental Pty Ltd 2024, *Review of Environmental Factors: Proposed Risk Mitigation Works – Gosangs Tunnel and Mermaid Inlet, Abrahams Bosom Reserve, Currarong*. Lesryk, Bundeena, NSW.

NSW Environmental Protection Authority 2020, *Draft Construction Noise Guideline*; viewed October 2023

NSW Government 2024, *Aboriginal Heritage Information Management System* (AHIMS) database, viewed February 2024

State Government of NSW and NSW Department of Climate Change, Energy, the Environment and Water 2023, *NSW State Vegetation Type Map*, Current Release C2.0M2.0 (December 2023), viewed August 2024.

APPENDIX 1 – Original compared to revised xx location

Not applicable

XX location in Determined REF	Proposed new xx location

APPENDIX 2 – Photographic record



Character of Abrahams Bosom Walking Track and adjacent vegetation.



Character of Abrahams Bosom Walking Track and adjacent vegetation.



Character of Abrahams Bosom Walking Track and adjacent vegetation.