

The impact amelioration measures which have been incorporated into the design of the proposed development at Mundamia, using an iterative process, are intended to minimise the potential for adverse impacts to be imposed on the natural environment, and to identify an appropriate balance between development opportunities and biodiversity constraints. The approach which has been adopted with respect to the proposed residential development of the subject land at Mundamia has been one of identifying the most important biodiversity aspects of the subject land (amongst other relevant elements) and determining an appropriate development footprint based on those constraints. That approach constitutes impact amelioration as an integral element of the proposal.

18.3 Environmental Management Measures

Relevant issues and matters which have been taken into account in determining the appropriate and relevant environmental management measures for the proposed residential development at Mundamia have included:

- a desire to manage and control human access into the *Conservation Area* and into retained habitats for threatened biota;
- an opportunity for the maintenance of stormwater treatment features (outlet structures, bioretention swales *etc*) *inter alia* as habitat for native biota;
- a desire to appropriately and effectively manage interactions and interfaces between the development and the *Conservation Area*;
- a need to establish mechanisms which facilitate ongoing management of the adjoining natural environment, and
- the desirability of engaging the local community in ongoing management of the natural environment.

In addition to impact amelioration as discussed above (*ie* minimising the potential for adverse impacts to be imposed), specific environmental management measures should be incorporated into all future development activities on the subject land at Mundamia.

Specific impact amelioration and environmental management measures to be implemented as part of the proposed development at Mundamia (in addition to the retention and management of the *Conservation Area*) include:

- the use of sediment fences and other appropriate control measures during construction activities to manage and/or avoid erosion and sediment discharge or the discharge of other contaminants;
- the ongoing management of stormwater discharge volumes and water quality from the development area, both during construction activities and following completion and occupation of the site, according to current 'best practice' principles and as outlined in the *Water Cycle Management Report* of Storm Consulting (2012);
- the ongoing management of the peripheral bioretention swale system to maintain water quality, soil moisture and groundwater regimes, and to provide supplementary habitat for native biota;
- the ongoing management of the APZs to ensure that habitat and resources for, and individuals of, threatened species are protected;

- the implementation of a management regime during the construction process to ensure that no wastes (including building rubble, garbage, contaminants, fuels, oils, paints or other chemicals) are discharged from the construction area, and that all such wastes and contaminants are contained within the construction footprint and are appropriately managed;
- management of the *Asset Protection Zones* (APZs), where required, around the development to retain specimens of and habitat or resources for the relevant threatened biota, including *inter alia*:
 - the preferential and selective retention of hollow-bearing trees;
 - the preferential and selective retention of identified Yellow-bellied Glider and Glossy Black Cockatoo feed trees;
 - the slashing of shrub layer and understorey vegetation at selected locations to promote the Nowra Heath-myrtle;
- the implementation of a *Vegetation Management Plan* (VMP) for the *E2 - Environmental Conservation Zone*, in accordance with the attached *Vegetation Management Principles Plan* (Appendix H) to ensure the long-term viability of flora and fauna populations which utilise the land, particularly the Glossy Black Cockatoo, Yellow-bellied Glider and Nowra Heath-myrtle.
- the collection of native vegetation removed from development areas and its re-use within the *Conservation Area* for bushland rehabilitation and/or landscaping purposes and/or the provision of that material to Council for bushland management and rehabilitation purposes;
- the destruction or appropriate removal of weeds from the development footprint and from the *Conservation Area*; and
- the implementation of a *Hollow-bearing Tree Protocol*, involving:
 - the segmental 'dismantling' by professional tree experts of hollow-bearing trees in order to salvage tree-hollows, wherever possible;
 - the placement of salvaged tree-hollows on existing large trees or dedicated poles in the *Conservation Area*;
 - alternatively, the placement of salvaged tree-hollows on the ground as hollow log habitat, where placement in existing trees is not practical; and
 - the use of artificial nest boxes to replace tree-hollows which cannot be salvaged and to supplement that resource on the site.

GLOSSARY

Activity	Relevantly means: (a) the erection of a building; (b) the carrying out of a work in, on, over or under land; (c) the use of land or of a building or work.
AHD	Australian Height Datum
Bioregion	<i>“a bioregion defined in a national system of bioregionalisation that is determined (by the Director-General by order published in the Gazette) to be appropriate for those purposes”</i> (TSC Act)
DA	<i>Development Application</i> prepared pursuant to the EP&A Act
Development	Relevantly means: (a) the erection of a building on that land; (b) the carrying out of a work in, on, over or under that land; and (c) the use of that land or of a building or work on that land.
DEC	the Department of Environment & Conservation (part of the DECCW)
DECC	the Department of Environment & Climate Change (part of the DECCW)
DECCW	the Department of Environment, Climate Change & Water (now part of the OEH)
DoP	New South Wales Department of Planning
DPI	New South Wales Department of Primary Industries
DP&I	New South Wales Department of Planning & Infrastructure
Endangered Ecological Community	<i>“an ecological community specified in Part 3 of Schedule 1”</i> of the TSC Act
Endangered Population	<i>“a population specified in Part 2 of Schedule 1”</i> of the TSC Act
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i>
Key Threatening Process	<i>“a threatening process specified in Schedule 3”</i> of the TSC Act
Locality	an area of 10km radius around the <i>“subject site”</i>
NPWS	NSW National Parks & Wildlife Service
OEH	Office of the Environment & Heritage, which is part of the Department of Premier & Cabinet, and which incorporates most of the DECCW
Recovery Plan	<i>“a plan prepared and approved under Part 4”</i> of the TSC Act
SIS	<i>Species Impact Statement</i> prepared pursuant to Sections 109, 110 and 111 of the TSC Act
Study Area	the <i>“subject site”</i> and adjoining land which will or may be affected, directly or indirectly, by the proposal
Subject Land	Lot 3 in DP 568613 and Lot 384 in DP 755952 George Evans Road Mundamia
Subject Site	The area proposed for development activities within the <i>“Subject Land”</i>
Threatened Ecological Community	<i>“an ecological community specified in Part 3 of Schedule 1, Part 2 of Schedule 1A or Part 2 of Schedule 2”</i> of the TSC Act
Threatening Process	<i>“a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities”</i> (TSC Act)
Threatened Species	<i>“a species specified in Part 1 or 4 of Schedule 1 or in Schedule 2”</i> of the TSC Act
TSC Act	<i>Threatened Species Conservation Act 1995</i>

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Figure 1

Location of the subject land at Mundamia



LEGEND

Subject Land

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan,

01503006009001,200

Metres

N

NOTES

1. Aerial photography courtesy of Nearmap 27/11/2011
2. Map locator courtesy of ESRI basemap, Streets
3. All features are approximate only and subject to detailed survey

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Project No: **610.10672**

Scale 1:30,000 @ A3

Date 29-Nov-2012

Drafted Sara Haddady

Approved Sepehr Sobhani

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Figure 2 Details of the subject land at Mundamia, and its immediate context



LEGEND

Drainage Swale

Incised Watercourse

Residential Footprint

Subject Land

02550100

Metres

N

NOTES

1. Aerial Photography courtesy of Nearmaps

2. All features are approximate only and subject to detailed survey

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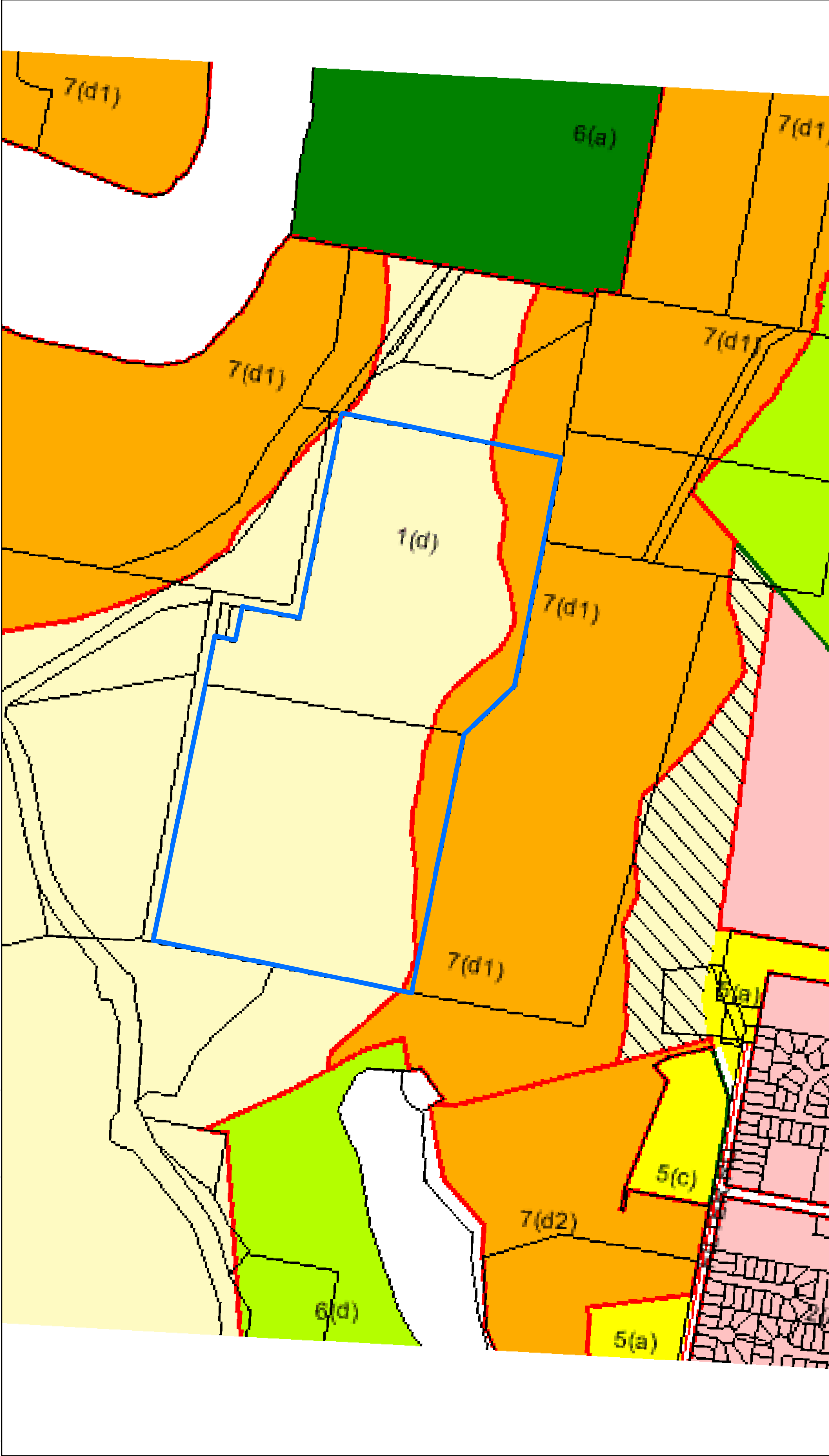
Date 29-Nov-2012

Drafted Sara Haddady

Approved Sepehr Sobhani

Figure 3

Existing zoning on the subject land at Mundamia



LEGEND

Subject Land

050100200

Metres

N

NOTES

1. All features are approximate only and subject to detailed survey
2. Proposed zoning courtesy of MALBEC Properties
3. DCDB © 2006 Department Lands

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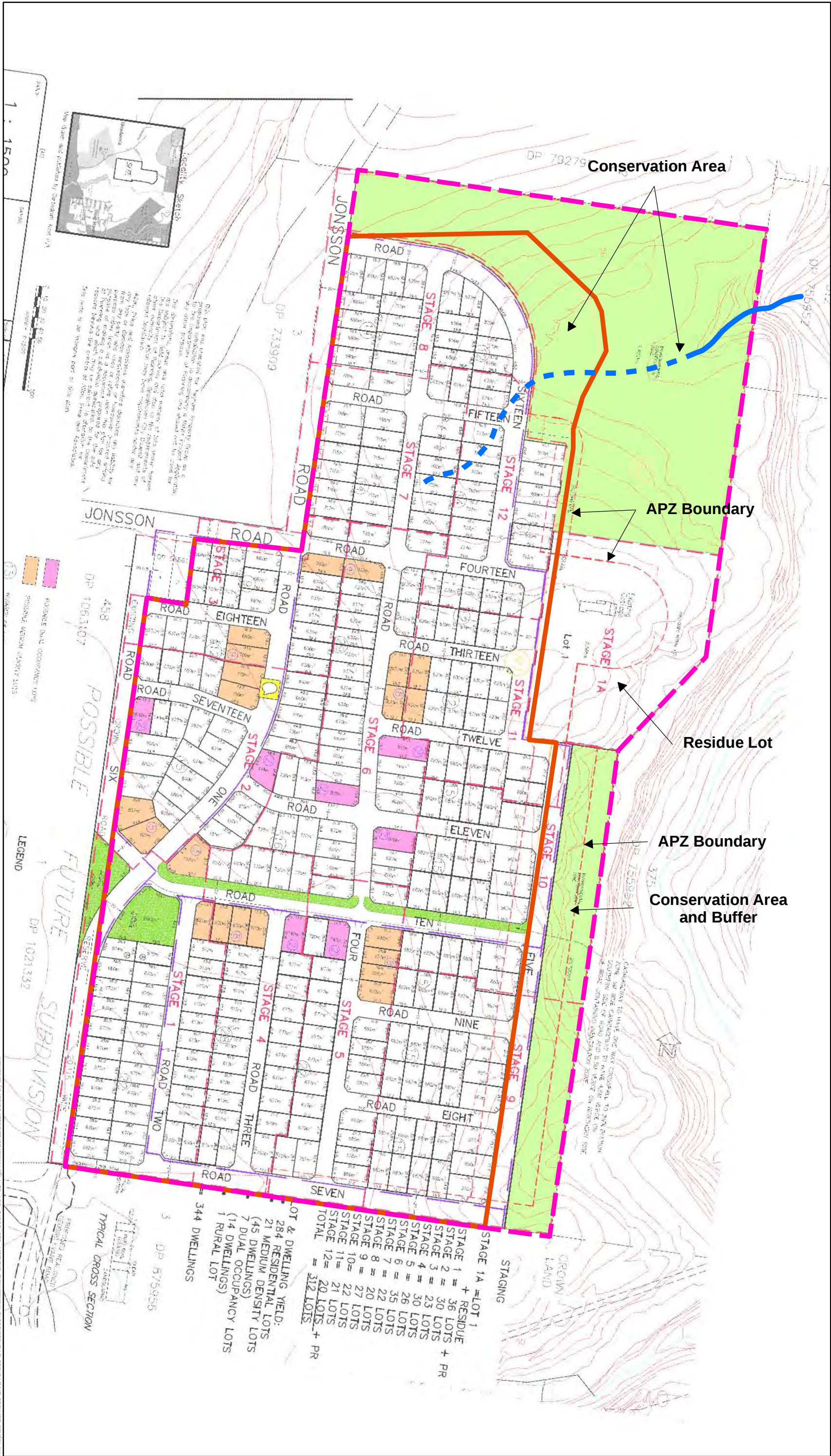
Sara Haddady

Approved

Sepehr Sobhani

Figure 4

Proposed lot layout and Conservation Areas



LEGEND

- Environmental Protection Zone (E2)
- Residential Zone (R1)
- Drainage Swale
- Incised Watercourse
- Asset Protection Zones

NOTES

1. Proposed zoning courtesy of MALBEC Properties
2. DCDB © 2006 Department Lands
3. All features are approximate only and subject to detailed survey

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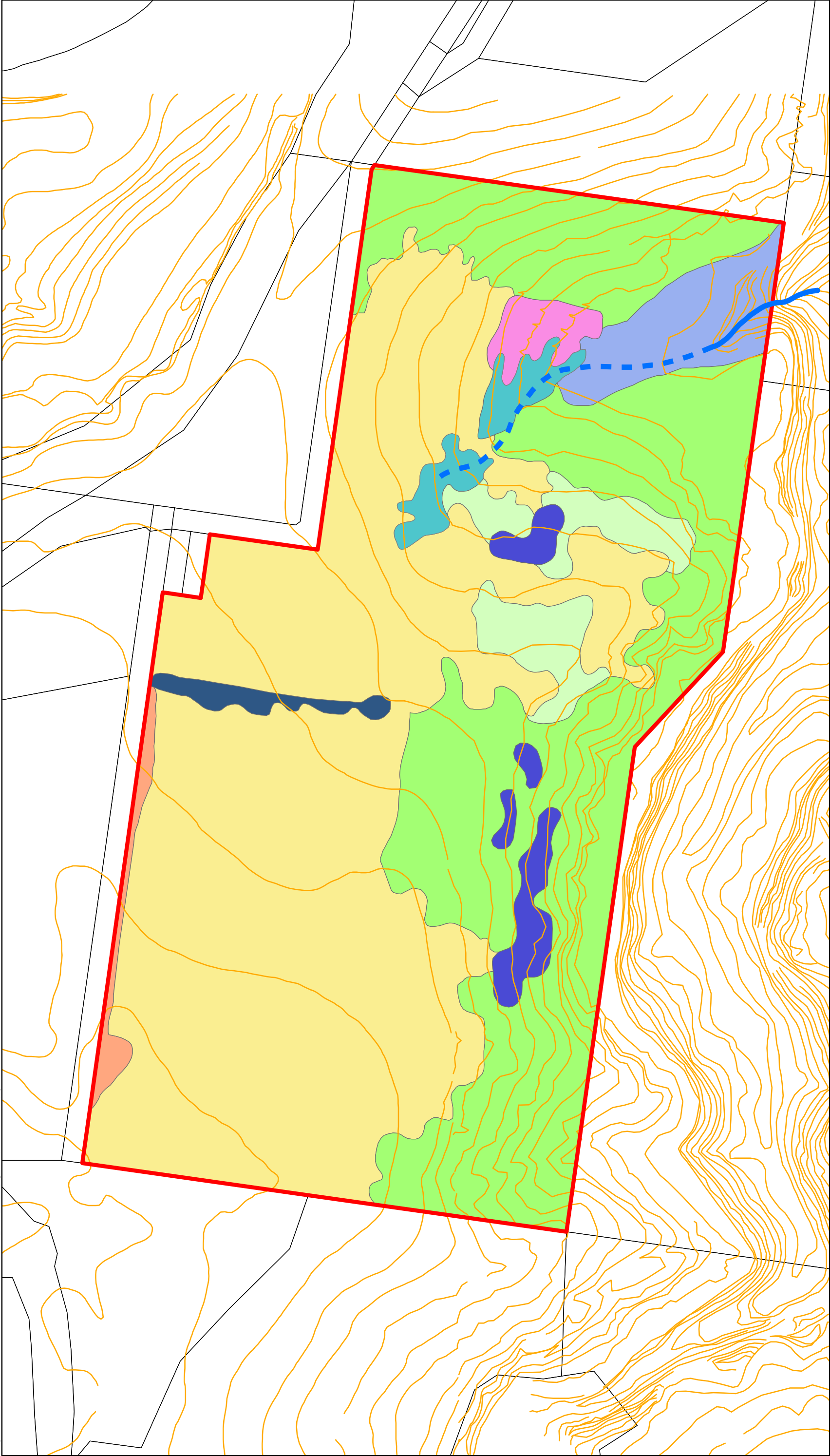
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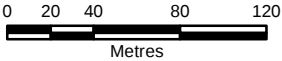
Figure 5

Vegetation and topography on the subject land at Mundamia



LEGEND

- Subject Land
- Contours
- Drainage Swale
- Incised Watercourse
- Grey Gum - Blue-leaved Stringybark Open Forest
- Highly disturbed Grey Gum - Stringybark Woodland
- Kunzea Heathland
- Paperbark Closed Forest
- Pasture
- Regrowth Woodland with Kunzea Heath
- Mixed woodland strip
- Scribbly Gum - Bloodwood Forest
- Spotted Gum Blackbutt Forest



NOTES

- All features are approximate only and subject to detailed survey
- Proposed zoning courtesy of MALBEC Properties



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