Biodiversity Development Assessment Report Waiver Request

Lismore Battery Energy Storage System

January 2022

Project Number: 20-839

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Document verification

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Acronyms and abbreviations

BAM	Biodiversity Assessment Method
BAM-C	BAM Calculator
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BCD	Biodiversity and Conservation Division, DPIE
BC Regulation	*Biodiversity Conservation Regulation 2017* (NSW)
BDAR	Biodiversity development assessment report
BESS	Battery Energy Storage System
cm	centimetres
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment (Cwth)
DBH	Diameter at breast height
DP	Deposited plan
DPI	Department of Primary Industries (NSW)
DPIE	Department of Planning, Industry and Environment (NSW)
EIS	Environmental Impact Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwth)
FM Act	*Fisheries Management Act 1994* (NSW)
ha	hectares
KFH	Key Fish Habitat
km	kilometres
kV	kilovolt
LCA	Land Category Assessment
LGA	Local government area
m	metres
MW	Megawatt
MWh	Megawatt hour
PCT	Plant Community Type
SSD	State Significant Development
SEARs	NSW Planning Secretary's Environmental Assessment Requirements
TEC	Threatened ecological community

Overview

The NSW *Biodiversity Conservation Act 2016* (BC Act) requires that a State Significant Development (SSD) application must be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head (or delegate) and the Environment Agency Head (or delegate) determine that the proposed development is not likely to have any significant impact on biodiversity values. This determination is referred to as a BDAR waiver.

NGH have prepared a request for a BDAR waiver on behalf of Maoneng Australia Pty Ltd. (Maoneng, the proponent), who propose to construct and operate a standalone 100 Megawatt / 200 Megawatt hour (MWh) Battery Energy Storage System (BESS) and associated ancillary infrastructure, approximately 12 km southwest of Lismore (Lismore BESS, the proposal).

The Planning Secretary's Environmental Assessment Requirements (SEARs) for the proposal were issued on 26th October 2021, application number SSD-27165998. Although BDAR waiver guidelines recommended that a request for a BDAR waiver is submitted with the application for SEARs, the extent of the biodiversity values and the potential impact on biodiversity at the proposal site, was not fully known on application for SEARs, specifically in relation to NGH's assessment of Category 1 – exempt land. NGH have now received approval for their assessment that Category 1 – exempt land covers most of the proposal site from the Biodiversity and Conservation Division of the NSW Department of Planning, Industry and Environment.

The extent of the Category 1 – exempt land and other matters relating to biodiversity values at the site, or lack thereof, are outlined in the BDAR waiver request below. This document has been prepared by a suitably qualified person with tertiary qualifications in natural sciences, Biodiversity Assessment Method (BAM) accreditation and seven years' work experience in environmental assessment.

1. Biodiversity Development Assessment Report waiver request

1.1 Information requirements

The required information for the BDAR waiver request is outlined in Table 1-1. Figure 1-1, Figure 1-2 and Figure 1-3 provide supporting spatial information.

Table 1-1 Information requirements for BDAR waiver request

Requirements	Item	Details
Administration	Proponent name	Maoneng Australia Pty Ltd.
	Contact details	Alex Godina, Project Development Lead 0431 074 541 / alex.godina@maoneng.co / www.maoneng.co Maoneng Level 13, 333 George Street, Sydney NSW 2000
	Project information	Lismore Battery Energy Storage System (Lismore BESS) Application number: SSD-27165998 Planning Secretary's Environmental Assessment Requirements (SEARs) issued on 26th October 2021; Environmental Impact Statement (EIS) is being drafted.
	Suitably qualified person	Claire Hewitt, Senior Ecologist, NGH Pty Ltd. Accredited in Biodiversity Assessment Method (BAM) – accreditation number BAAS20009. MA (Natural Sciences), Cambridge University Currently studying for Master of Environmental Science and Management, University of New England Seven years' experience undertaking environmental assessment, including field identification of flora and fauna and their habitats, as a consultant ecologist and for Local Land Services.
Site details	Address, Lot and deposited plan (DP), local government area (LGA)	85 Auckram Road, Mckees Hill / Lot 235 DP755728 (BESS site) 1055 Rogerson Road / Lot 101 DP626660 (existing TransGrid substation and proposed transmission infrastructure for project connection to existing substation) Sections of Cooper Road, Rogerson Road and Fig Tree Lane (access infrastructure upgrades) Lismore LGA Fig Tree Lane is in Richmond Valley LGA

Requirements	Item	Details
	Description	The proposal site consists of: • the proposed BESS location in the northern section of Lot 235 DP755728 • transmission infrastructure for connection to the TransGrid Lismore 330 kilovolt (kV) substation (Lot 101 DP626660) • road and access infrastructure upgrades (Cooper Road, Rogerson Road and Fig Tree Lane) The proposal site has been approved as predominantly Category 1 – exempt land, apart from one scattered, native tree. There are also two scattered, non-native trees within the proposal site. Refer to Appendix A for the Land Category Assessment (LCA) and associated approval from the Biodiversity and Conservation Division (BCD) of the NSW Department of Planning, Industry and Environment (DPIE). Please note that the proposal site has been adjusted slightly since submitting the LCA to BCD for approval. The adjusted proposal site does not impact on biodiversity values, as described in Table 1-2.
	Location Map	Refer to Figure 1-3
	Site Map	Refer to Figure 1-2
Proposed development	Project description	Construction and operation of a standalone 100 Megawatt (MW) / 200 Megawatt hour (MWh) Battery Energy Storage System (BESS) and associated ancillary infrastructure The maximum development footprint (total area of ground disturbance) for the BESS and associated ancillary infrastructure would be approximately 5.4 hectares (ha). This includes the maximum impact area for the transmission line connection (approximately 1 ha) which would likely be lessened (to approximately 0.6 ha) through detailed design. Refer to Figure 1-3 for the indicative site plan. Please note that the maximum development footprint has been adjusted within the proposal site since submitting the LCA to BCD for approval. The adjusted development footprint does not impact on biodiversity values, as described in Table 1-2.

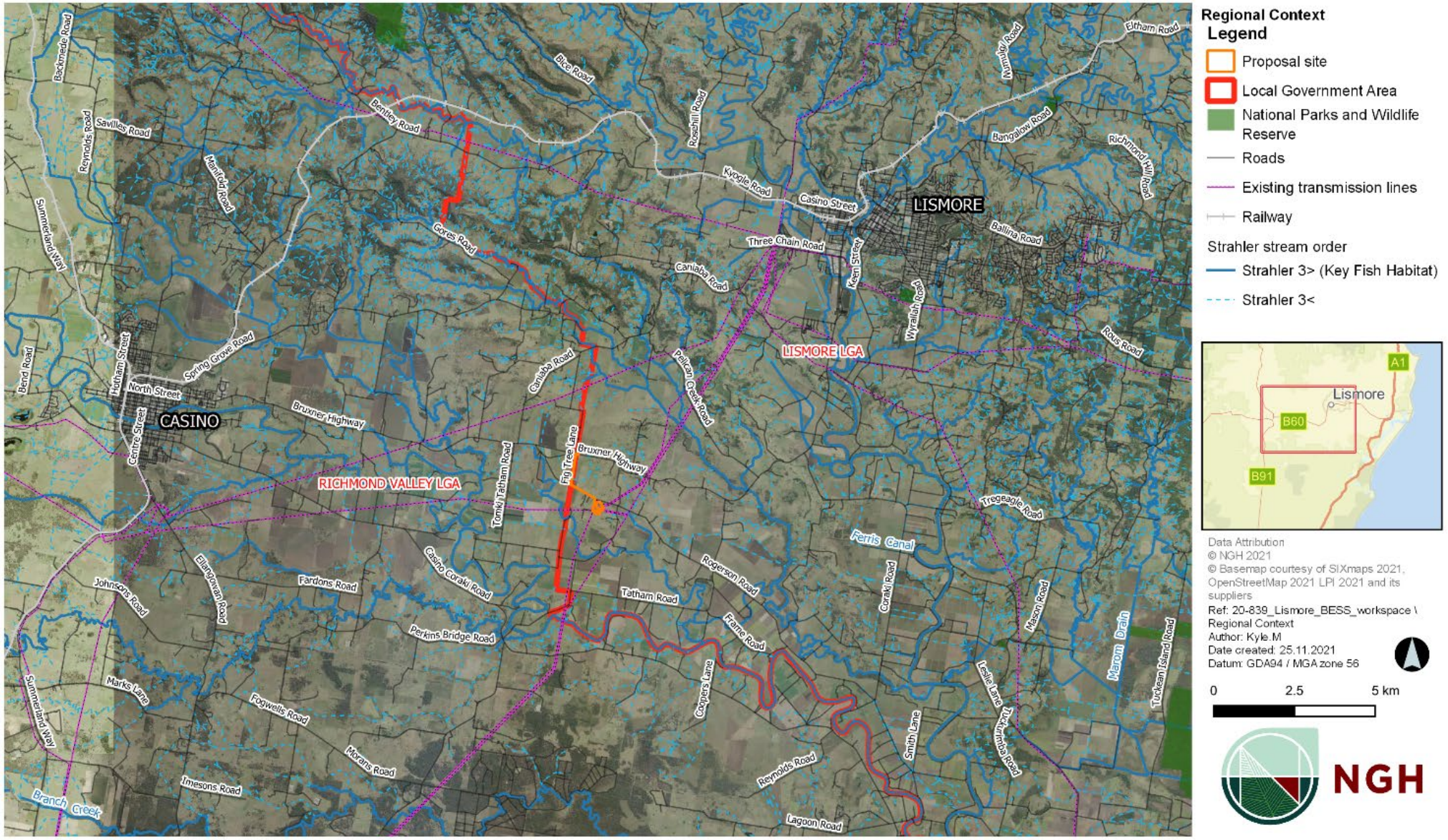


Figure 1-1 Lismore BESS location map

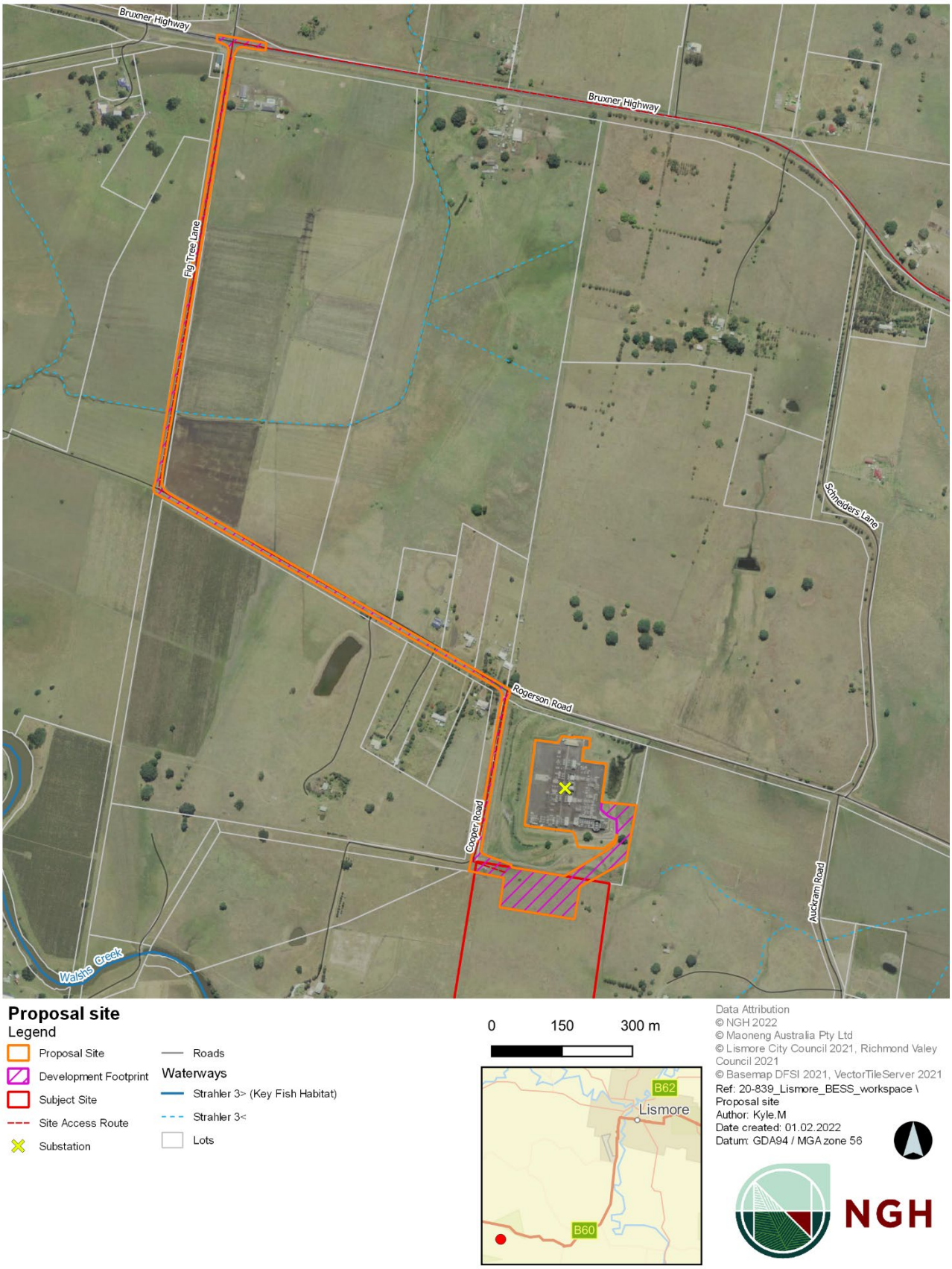


Figure 1-2 Lismore BESS proposal site

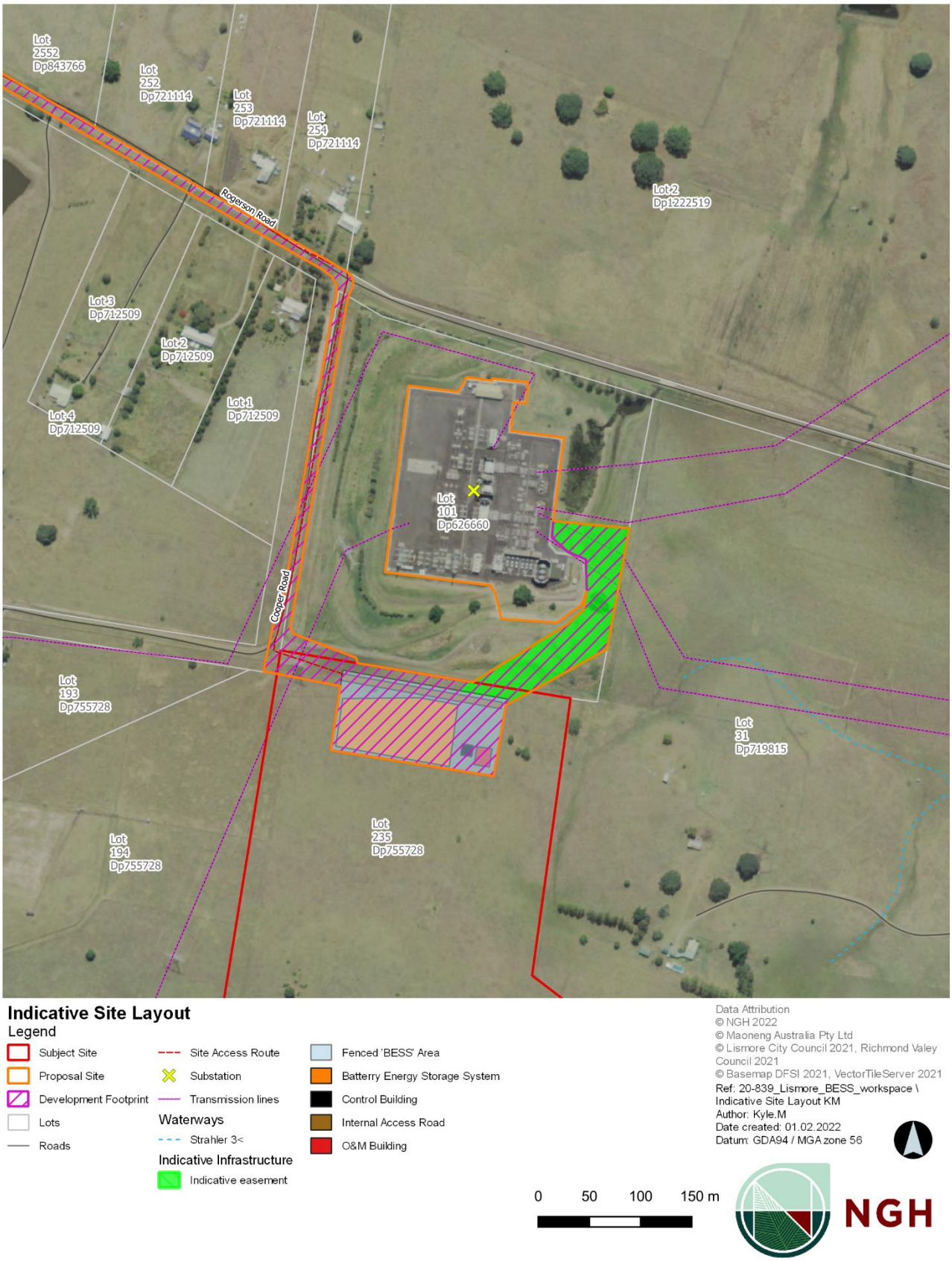


Figure 1-3 Lismore BESS indicative site plan

1.2 Impacts on biodiversity values

Table 1-2 provides details on biodiversity values at the proposal site and information on how the proposal would not be impacting biodiversity values. Figure 1-4 through Figure 1-9 provide supporting spatial and visual information.

Table 1-2 Description of biodiversity values at the Lismore BESS proposal site

Biodiversity value	Meaning	Description
Vegetation abundance – 1.4(b) NSW *Biodiversity Conservation Regulation 2017* (BC Regulation)	Occurrence and abundance of vegetation at a particular site	Refer to Figure 1-4 for vegetation mapping at the proposal site. This shows vegetation in the proposal site and within a 20m buffer area surrounding the proposal site (the proposal site buffer area). The native vegetation in the proposal site buffer area will not be directly impacted by the proposal, and indirect impacts will be minimal as native vegetation is generally located upslope of the proposal site (either on roadside banks or up a hill). The site was assessed by a BAM accredited, NGH Senior Ecologist, on 7th January 2021, 8th July 2021 and 15th September 2021. Please note that the indicative proposal site has changed since assessments commenced in January 2021, however vegetation assessment has taken place in all areas. A combination of assessment methods was used including: • four BAM plots to assess vegetation integrity • scattered tree assessment of all trees within the proposal site and 20m buffer area • the step-point method, recommended by Local Land Services, to assess groundcover vegetation • rapid assessment • random meander • assessment of habitat values for threatened species. The site predominantly consists of non-native groundcover vegetation, such as Rhodes Grass (*Chloris gayana*) and Setaria (*Setaria sphacelata*). Refer to Appendix A for the LCA and approval.

Biodiversity value	Meaning	Description
		There is one native tree, Hard Quandong (*Elaeocarpus obovatus*), in Lot 235 DP755728, which would be impacted by the proposal. This tree has a diameter at breast height (DBH) of less than 20 centimetres (cm). Refer to Figure 1-5. Note that a woody weed species, Chinese celtis (*Celtis sinensis*) occurs beside the Hard Quandong. This tree would also be impacted by the proposal. Chinese celtis is a listed weed species on the NSW North Coast Regional Weed Management Plan (North Coast Local Land Services, 2021), which must be contained to prevent the ongoing spread of the species. There is one non-native scattered tree, Hill's Weeping Fig (*Ficus microcarpa*) (native to northern Queensland), in Lot 101 DP626660, which may be impacted by the proposal. Refer to Figure 1-6. Other native scattered trees occur within the proposal buffer area and would not be impacted by the proposal. The two scattered trees in the north of Fig Tree Lane – both Rusty Fig (*Ficus rubiginosa*) – are on private land. A small clump of scattered trees (Red Kamala (*Mallotus philippensis*) and Tuckeroo (*Cupaniopsis anacardioides*) is located on the south-eastern boundary of the proposal buffer area. These trees would not be directly impacted by the proposal and would not be impacted indirectly as they occur upslope of the proposed BESS development. Rows of native and non-native planted trees occur within the proposal buffer area along sections of Rogerson Road and Cooper Road. The native trees are predominantly Weeping Bottlebrush (*Callistemon viminalis*) adjacent to the Lismore substation and a mixture of eucalypts (*Eucalyptus tereticornis*, *E. propinqua* and *E. microcorys*) and non-eucalypts (*Corymbia maculata*, *Grevillea robusta* and *Syzygium australe*). These trees would not be directly impacted by the proposal. Indirect impacts would be minimal as trees occur on roadside banks, upslope of proposed infrastructure upgrades or sufficiently distant from the proposed infrastructure upgrades to avoid indirect impacts. Planted native vegetation, predominantly Weeping Bottlebrush, is located around the dam to the east of the TransGrid Lismore substation, within the proposal site buffer area. This

Biodiversity value	Meaning	Description
		vegetation would not be directly impacted by the proposal. Minor indirect impacts, such as disturbance, are possible during the construction phase but these can be mitigated through a carefully implemented construction management plan incorporating vegetation fencing and signage. Mitigation strategies will be prepared as part of the EIS. No threatened flora species were identified during site assessment.
Vegetation integrity 1.5(2)(a) BC Act	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	The proposal site consists of existing access roads, land used for cattle grazing and land surrounding industrial infrastructure (the TransGrid Lismore substation). These areas are all highly modified and dominated by exotic vegetation. The scattered, native trees in the proposal buffer area may once have formed part of the plant community type (PCT) 1068 - Pepperberry - Giant Stinging Tree - Fig lowland rainforest in the NSW North Coast Bioregion but this has been extensively cleared in the surrounding area for intensive and extensive agriculture. Only tiny fragments of the PCT remain, as scattered trees or clumps of scattered trees. This PCT has four associated threatened ecological communities (TEC), as detailed below: • Listed NSW *Biodiversity Conservation Act 2016* (BC Act) (Endangered): Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions • Listed BC Act (Endangered): Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion • Listed Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Critically Endangered): Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions • Listed EPBC Act (Critically Endangered): Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion. Due to the level of modification and disturbance, the small areas of this PCT within the proposal buffer area do not meet the criteria necessary for listing as a TEC under the BC Act or EPBC Act.

<table>
<tr><th>Biodiversity value</th><th>Meaning</th><th>Description</th></tr>
<tr><td></td><td></td><td>The four BAM plots, as depicted in Figure 1-7, returned very low vegetation integrity scores in the BAM Calculator. The vegetation integrity scores are detailed below for each BAM plot.
<table>
<tr><th>BAM Plot</th><th>Composition condition score</th><th>Structure condition score</th><th>Function condition score</th><th>Vegetation integrity score</th></tr>
<tr><td>LB1</td><td>3.1</td><td>0.4</td><td>0</td><td>1</td></tr>
<tr><td>LB2</td><td>5.2</td><td>0.4</td><td>0</td><td>1.2</td></tr>
<tr><td>LB3</td><td>7.8</td><td>0.5</td><td>0</td><td>1.6</td></tr>
<tr><td>LB4</td><td>7.9</td><td>0.5</td><td>0</td><td>0.2</td></tr>
</table>
The proposal will impact:
non-native, groundcover vegetation on Category 1 – exempt land (refer to Appendix A)
one native tree, Hard Quandong (Elaeocarpus obovatus)
one non-native tree, Hill’s Weeping Fig (Ficus microcarpa)
one woody weed, Chinese celtis (Celtis sinensis)</td></tr>
<tr><td>Habitat suitability 1.5(2)(b) BC Act</td><td>Degree to which the habitat needs of threatened species are present at a particular site</td><td>The highly cleared and fragmented landscape present on the proposal site and in the surrounding landscape means that habitat suitability for threatened species is very limited. Trees that are present in the landscape occur only as scattered trees, in very small clumps, have been planted or are non-native.
The site was inspected for threatened flora species in January, July and September 2021, and none was found.</td></tr>
</table>

Biodiversity value	Meaning	Description
		The site was also inspected for suitability of habitat for threatened fauna species, including within planted native vegetation, and no suitable habitat was found. There were no tree hollows within the proposal site or its buffer area. Some mistletoe (*Amyema* spp.) was growing on the rows of planted Weeping Bottlebrush (*Callistemon viminalis)* within Lot 101 DP626660, but this vegetation will not be impacted by the proposal. No predicted ecosystem or species candidate species were listed when BAM plot data was entered into the BAM Calculator. No species candidate species were required to be surveyed when the native tree, Hard Quandong (*Elaeocarpus obovatus*), that will be impacted by the proposal, was entered into the BAM-C under the scattered tree assessment. Candidate species were excluded because the habitat was too degraded, or habitat constraints were not met. The predicted species returned by the BAM-C for the scattered tree assessment are detailed in Appendix A. Please note that no ecosystem credits have been generated for these species in the BAM-C. The listed species require woody vegetation in which to forage, roost or breed. The Hard Quandong that will be impacted by the proposal does not contain tree hollows or loose bark and is unlikely to provide suitable nesting or foraging habitat as it is too young. Refer to Figure 1-5. There is low potential for threatened flora or fauna species to occur due to the level of past modification. However, it is noted that, twenty previous records of the koala (*Phascolarctos cinereus*) (listed as Vulnerable under both the BC Act and the EPBC Act) occur in and within 500m of the proposal buffer area. These records date from between 2004 and 2019. There are no *Eucalyptus* species within the proposal site, however there are some roadside, planted eucalypts within the proposal buffer area. These trees occur on banks above the roadside and would not be impacted by the proposal, even indirectly. Due to the highly fragmented nature of vegetation suitable for koala habitat in the landscape, it is likely that koalas are using eucalypts within the proposal buffer area to move between areas of slightly more intact vegetation on riparian areas to the south-west

Biodiversity value	Meaning	Description
		and on hills and ridges to the north-east of the proposal site. The movement of the koala would not be impacted by the proposal as no new roads are being created and the proposed location of the BESS and connecting transmission infrastructure does not contain trees suitable for koala use. No other threatened species records were returned within proposal buffer area. **Potential prescribed impacts:** 1. There is no karst and there are no caves, crevices, cliffs or other geological features of significance within the proposal site or buffer area. 2. There are no rocks within the proposal site or buffer area. 3. The human-made structures within the proposal site and proposal buffer area are: • Electricity transmission infrastructure • One community hall • Barbed wire and metal fencing • One culvert (for the drainage channel under Fig Tree Lane – refer Figure 1-9). None of these structures is to be impacted by the proposal, apart from some potential upgrades to fencing. The fencing is not suitable habitat for threatened species. 4. The proposal would impact two non-native trees, Hill's Weeping Fig (*Ficus microcarpa*), and Chinese celtis (*Celtis sinensis*). The latter is a listed weed species which must be contained to prevent the ongoing spread of the species (North Coast Local Land Services, 2021). The former has been present prior to 1990, judging by historical spatial imagery and is reasonably large (see Figure 1-6). However, it does not contain hollows and is not a suitable food tree for the one threatened fauna species that has been recorded in the area, the koala (*Phascolarctos cinereus*). It is possible that the Grey-headed Flying Fox (*Pteropus poliocephalus*), listed as vulnerable under the BC Act and the EPBC Act, may use the Hill's Weeping Fig as a food source, but since there are other figs nearby, including the native Rusty Fig (*Ficus rubiginosa*), it is unlikely that the loss of one Weeping

Biodiversity value	Meaning	Description
		Hill's Fig will impact the species. Non-threatened fauna were observed using the Hill's Weeping Fig, such as the Pied Currawong (*Strepera graculina*) and the Australasian Figbird (*Sphecotheres vieilloti*). These are common species in the area and would not be impacted by the loss of one tree. In addition, exotic, groundcover vegetation will be impacted by the proposal. This groundcover vegetation is already subject to disturbance through grazing (in Lot 235 DP755728), slashing (along roadsides) and mowing (in Lot 101 DP626660). It is highly unlikely that removal of this groundcover vegetation for the BESS would impact threatened species or their habitat. The non-threatened fauna species that were observed during the site visits were either using the rows of planted Weeping Bottlebrush (Brown Honeyeater (*Lichmera indistincta*), Superb Fairy-wren (*Malurus cyaneus*)) or the taller groundcover vegetation (Chestnut-breasted Mannikin (*Lonchura castaneothorax*), Red-browed Finch (*Neochmia temporalis*). The taller groundcover vegetation is found on the embankments that have been formed to control water flow into the substation in Lot 101 DP626660. These embankments would not be impacted by the proposal. It is possible that increased noise during the construction phase of the proposal may disturb koalas that are in the vicinity. As there are so few eucalypts on the roadside, koalas using the trees are easy to spot and the risk of harm would be mitigated by the employment of a fauna spotter during construction. The fauna spotter would protect any koalas through relocation to a safer location. Mitigation strategies will be prepared as part of the EIS.
Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	Road and access upgrades are planned for the proposal, but no new roads are planned. The risk of vehicle strike on koalas may be slightly elevated during the construction phase as more heavy machinery will be in use on the existing roads to upgrade infrastructure and deliver materials. However, this risk will be temporary and may even slow down regular drivers on the existing roads (who having been observed using them at speed). In addition, the risk of harm would be mitigated by the employment of a fauna spotter during

Biodiversity value	Meaning	Description
		construction who can protect any koalas through relocation to a safer location. Mitigation strategies will be prepared as part of the EIS. Other threatened species, predicted to occur by the BAM-C from the scattered tree assessment report (refer to Appendix B), require reasonably intact, older woody vegetation, fly higher in the air or are nocturnal (when construction work will have ceased). The abundance of these species would not be impacted by the proposal. No human made structures are to be demolished by the proposal. Impacts on threatened species habitat associated with non-native vegetation are described in 'Habitat suitability' in this table. There is one non-natural water body, a dam, east of the Lismore substation and a small section of this dam occurs within the proposal buffer area. This dam is fringed with planted native vegetation, predominantly Weeping Bottlebrush (*Callistemon viminalis).* This water body would not be directly impacted by the proposal. It is possible that that there could be some indirect impacts, for example run-off, during the construction phase but these could be mitigated through a carefully implemented construction management plan incorporating erosion and run-off controls. Mitigation strategies will be prepared as part of the EIS. No threatened flora species were identified in the vegetation surrounding the dam and no threatened fauna species have been recorded as using the dam. It is possible that transitory threatened fauna species use the dam for drinking or cooling but these species would not be impacted by the proposal as the dam and its surrounding vegetation will remain intact.
Habitat connectivity 1.4(c) BC Regulation	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	The proposal site does not contribute to habitat connectivity. There are very few trees within the proposal site, and only two trees (and one woody weed) are planned to be removed for the proposal. The vegetation present on site is predominantly exotic groundcover vegetation, which is managed through slashing, grazing or mowing. Small clumps of woody vegetation present in the landscape are outside the proposal site and would be preferred habitat for fauna moving through the landscape. Koalas may cross over the proposal site to reach areas of suitable habitat on Walshs

Biodiversity value	Meaning	Description
		Creek to the south-west of the proposal site or vegetation on hills and ridges to the north-west of the proposal site. However, there are already many impediments to movement in the landscape, including highly fragmented woody vegetation, cleared areas used for grazing and cropping and busy roads, particularly the Bruxner Highway. The proposal would not make movement of the koala more difficult. Other threatened species that may use features in the landscape, such as the figs or the dam, would not be impacted by the proposal as these features will remain intact. There is one ephemeral, highly modified creek that crosses the proposal site, underneath Fig Tree Lane (refer to Figure 1-9). The creek banks are devoid of native vegetation, and it is subject to the impacts of cropping and grazing (run-off, increased nutrient load) that occur either side of the creek. It is highly unlikely to support threatened species or function as a corridor of connectivity through the landscape.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	The proposal would not impact the movement of threatened species due to the lack of native vegetation, particularly woody vegetation, within the proposal site. In addition, only three trees – a Hard Quandong, a Hill's Weeping Fig and a Chinese celtis – are proposed to be removed for the proposal. The loss of these trees would not impact the movement of threatened species as higher quality, large patches of woody vegetation are found in the surrounding landscape (albeit highly fragmented). The proposal would not impact any riparian areas that may be used by threatened species for movement within the landscape. The creek that runs under Fig Tree Lane (refer to Figure 1-9) is highly modified, poor quality and not fringed with native vegetation.
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	The flight paths of protected animals would not be impacted by the proposal. The BESS is a low-lying structure, and any transmission infrastructure will be equal to or lower than existing electricity transmission infrastructure already present within and around the proposal site. No wind turbines or monitoring masts would be erected as part of the proposal.

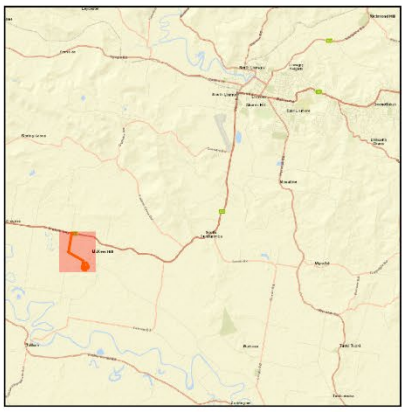
Biodiversity value	Meaning	Description
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site	No creeks or waterbodies would be directly impacted by the proposal. There may be minor, indirect impacts to the dam adjacent to the Lismore substation and the ephemeral, highly modified creek running under Fig Tree Lane during the construction phase of the proposal. Any potential impacts can be mitigated through a carefully implemented construction management plan. Mitigation strategies will be prepared as part of the EIS. The creek is unlikely to support threatened species as it is highly degraded and devoid of native vegetation. The dam may support transitory threatened species which use it for drinking and cooling. As the dam and its vegetation will remain intact, these species would not be affected by the proposal. The modified creek is a tributary of Walshs Creek. The Department of Primary Industries (DPI) Fisheries portal lists the freshwater fish community status of Walshs Creek as 'Good'. Walshs Creek is a Type 1 Key Fish Habitat (KFH) as the Southern Purple Spotted Gudgeon (*Mogurnda adspersa*), listed as threatened under the NSW *Fisheries Management Act 1994* (FM Act), is mapped to occur here. However, the proposal in unlikely to impact water quality, as water reaching Walshs Creek from the highly modified creek is already poor due to agricultural impacts and the existing road. The proposal area is not located within a groundwater vulnerability area. A search of the EPBC Act Protected Matters Search Tool (PMST) was undertaken on the 6th July 2021 with a 10 km buffer of the proposal site. There are no Wetlands of International Importance within 10 km of the proposal site. No coastal wetlands or littoral rainforests under the *State Environmental Planning Policy (Coastal Management) 2018* are mapped within the proposal site or proposal buffer area.

Vegetation Mapping (BDAR waiver request)

Legend
- Proposal Site
- Proposal Site - 20m buffer
- Substation
- Roads

Waterways
- Strahler >3 (Key Fish Habitat)
- Strahler <3

Vegetation
- Scattered native trees
- Planted native trees
- Non-native vegetation
- Non-native scattered trees



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Author: kyle.m
Date created: 01.02.2022

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Figure 1-4 Lismore BESS vegetation mapping

Figure 1-5 Native scattered tree, Hard Quandong (*Elaeocarpus obovatus*), within proposed development footprint. Note the tree on the left is Chinese celtis (*Celtis sinensis*), a weed.

Figure 1-6 Non-native scattered tree, Hill's Weeping Fig (*Ficus microcarpa*), adjacent to Lismore substation, which may be directly impacted by the proposal.

Site assessment (BDAR waiver request)

Legend
- Proposal Site - 20m buffer
- Substation
- Roads

Waterways
- Strahler >3 (Key Fish Habitat)
- Strahler <3
- BAM plot locations
- Rapid assessment points

Vegetation
- Scattered native trees
- Planted native trees
- Non-native vegetation
- Non-native scattered trees

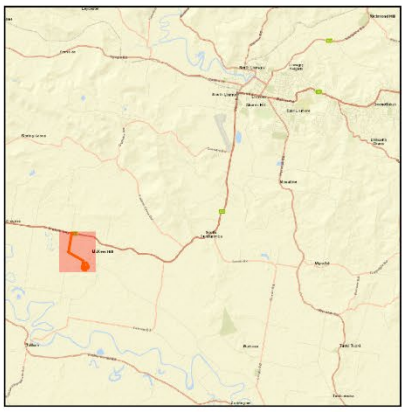

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Figure 1-7 NGH site assessment of proposal buffer area

Figure 1-8 NSW BioNet records

Figure 1-9 Ephemeral, modified creek running through culvert underneath Fig Tree Lane

2. References

North Coast Local Land Services. (2021). *North Coast Regional Strategic Weed Management Plan.* Retrieved from https://www.lls.nsw.gov.au/__data/assets/pdf_file/0006/722760/Revised-North-Coast-Regional-Weed-Mgmt-Plan-web-002.pdf

Appendix A Land category assessment and approval

A.1 Land category assessment

Land Category Assessment

Lismore BESS

September 2021

Project Number: 20-839

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Document verification

Project Title:	Lismore BESS
Project Number:	20-839
Project File Name:	20-839 Lismore BESS Land Category Assessment

Revision	Date	Prepared by	Reviewed by	Approved by
Final V1.0	1/02/2022	Claire Hewitt (BAAS 20009)	Beth Noel (BAAS19015)	Beth Noel (BAAS19015)

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Appendices

Acronyms and abbreviations

BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
DPIE	Department of Planning, Industry and Environment (NSW)
FPC	Foliage Projective Cover
ha	hectare(s)
km	kilometre(s)
LLS Act	*Local Land Services Act 2013*
LLS Regulation	Local Land Services Regulation 2014
m	metre(s)
NVR Map	Native Vegetation Regulatory Map
DCS SS	Spatial Services, a business unit of the NSW Department of Customer Service (NSW)

1. Land Category Assessment

1.1 Summary

NGH were engaged by Maoneng to prepare a Land Category Assessment (LCA) for the proposed Lismore Battery Energy Storage System (BESS) located in 85 Auckram Road, McKees Hill (Lot 235 / DP755728), and the associated infrastructure area (including Fig Tree Lane, the western end of Rogerson Road, the northern section of Cooper Road and the area south of the electricity sub-station (Lot 101 / DP626660)). The site is approximately 12 km south-west of Lismore, NSW, and is referred to within this document as the study area. Please refer to Appendix A.1.

The development of the BESS will require assessment using the Biodiversity Assessment Method (BAM) and the preparation of a Biodiversity Development Assessment Report (BDAR). Section 6.8(3) of the *Biodiversity Conservation Act 2016* determines that the BAM is to exclude the assessment of the impacts of clearing of native vegetation on Category 1-exempt land (within the meaning of Part 5A of the *Local Land Services Act 2013*).

Boundaries mapping Category 1 - Exempt Land and Category 2 - Regulated Land on the Native Vegetation Regulatory (NVR) Map are not yet publicly available. Only boundaries mapping Category 2 - Sensitive Regulated Land (environmentally sensitive land), Category 2 - Vulnerable Regulated Land (land prone to erosion) and excluded land (land excluded from Part 5A of the *Local Land Services Act 2013)* are currently publicly visible on the NVR Map.

During the transitional period, BAM accredited assessors may establish the categorisation of land for the Environment Agency Head to consider, following the method utilised to develop the Native Vegetation Regulatory Map.

1.2 Legislative Provisions for Determining Category 1 - Exempt Land

1.2.1 Section 60J of the *Local Land Services Act 2013*

Under section 60J of the *Local Land Services Act 2013* (LLS Act), matters relating to the determination of mapped Category 1 - Exempt Land or Category 2 - Regulated Land include:

60J (2) Native vegetation that comprises grasslands or other non-woody vegetation is taken to have been cleared if the native vegetation was significantly disturbed or modified. The regulations may make provision for the purposes of determining whether native vegetation has been significantly disturbed or modified for the purposes of this Division.

The clearing of native vegetation after 1990 must have been done legally, and the vegetation must have been cleared as of 1st January 1990 or between 1st January 1990 and 25th August 2017. Satellite imagery may be used to determine the native vegetation clearing.

1.2.2 Section 114 of the *Local Land Services Regulation*

Section 114 of the Local Land Services Regulation 2014 (LLS Regulation) outlines how to determine whether native vegetation has been significantly disturbed or modified.

(1) Native vegetation that comprises grasslands or other non-woody vegetation is taken to have been significantly disturbed or modified (and therefore cleared) only if—

> *(a) there has been a detectable variation (from information obtained from aerial or satellite imagery) in the structure or composition, or both, of non-woody vegetation, and*

(b) that variation is consistent with management of pasture or crops for agricultural purposes, and

(c) that variation has been sustained for at least 12 months on more than one occasion before the commencement of Part 5A of the Act, and

(d) that variation has not been caused only by grazing on the land, and

(e) that variation occurred (from information obtained from aerial or satellite imagery) between 1 January 1990 and the date of commencement of Part 5A of the Act.

1.3 Determination of Category 1 - Exempt Land for Lismore BESS

1.3.1 Overview of Methodology

Using the provisions of section 60J of the LLS Act and section 114 of the LLS Regulation, analysis was undertaken of the study area proposed for development of the Lismore BESS and the associated infrastructure upgrade using historical aerial imagery dated 1991 and 1997, and the most recent aerial imagery available for the site from Spatial Services, a business unit of the NSW Department of Customer Service (DCS) (DCS SS). Please note that aerial imagery is not available for 1990 for this area and therefore imagery from 1991 has been used. The 1991 imagery provides a reasonable indication of what was occurring in 1990.

Please refer to Appendix A.1 which depicts the study area and the most recent aerial imagery (dating from 2009) available from DCS SS. Category 1 – Exempt Land and Category 2 – Regulated Land, using the methodology described in this document, has been proposed for the study area only.

A series of aerial images was carefully analysed for evidence of disturbance or modification of non-woody vegetation due to intensive agricultural activity that had been sustained over a period of 12 months or more since 1st January 1990.

Other spatial data that were analysed included the following:

- 2017 Land Use Dataset v1.2 (Australian Land Use and Management (ALUM) Classification version 8 (Department of Planning, Industry and the Environment (DPIE), 2020).
- NSW Woody Vegetation extent and Foliage Projective Cover (FPC) 2011 (DPIE, 2015).
- Category 2 – Sensitive Regulated Land and Category 2 - Vulnerable Regulated Land on the Native Vegetation Regulatory (NVR) Map (DPIE, 2021).
- Aerial imagery of historical land use (sourced from Spatial Services, a business unit of the Department of Customer Service (DCS SS), 2021).
- Vegetation Map for the Northern Rivers CMA VIS_ID 524 (DPIE, 2010)
- Vegetation Map of Lismore Local Government Area, 2011.VIS_ID 4479 (Lismore City Council, 2016)
- Vegetation assessment from NGH field assessments.

In addition, land zoning was determined using the NSW Planning Portal. The proposal site is zoned RU1: Primary Production, as shown in Appendix A.2.

1.3.2 Site Assessment

A site assessment was conducted by a BAM accredited assessor on 7th January 2021 (Rogerson Road), 8th July 2021 (Fig Tree Lane, Cooper Road and Lot 235 / DP755728), and 15th September 2021 (Lot 101 / DP626660). Refer to Appendix A.1 for road names and Lots.

The site assessment included rapid assessment and classification of Plant Community Types (PCTs), groundcover assessment, collection of BAM plot data and ground-truthing of NSW vegetation mapping. The site assessment also identified scattered trees and planted trees.

Vegetation mapping following site assessment is shown in Appendix A.3.

1.3.3 Waterways

A mapped first order stream, runs east to west across Fig Tree Lane within the study area see Appendix A.1. This is an ephemeral stream which runs into Walsh's Creek.

Walsh's Creek runs north west to south east to the west of the study area, joining the Richmond River to the south.

1.3.4 Native Vegetation Regulatory Mapping

No areas of Category 2 - Vulnerable Regulated Land or Category 2 – Sensitive Regulated Land are mapped within the study area. Walsh's Creek, to the west of the study area, is mapped as Category 2 – Vulnerable Regulated Land.

No Excluded Land is mapped within the study area (refer to Appendix A.1).

1.3.5 Analysis and Results

The analysis of the sources described in section 1.3.1, the site assessments described in section 1.3.2 and the historical aerial imagery demonstrates evidence of extensive vegetation modification resulting from agricultural and road land use within the study area in 1991, 1997 and 2009. Table 1-1 shows how the spatial imagery and site assessment were used in determining land category.

Table 1-1 Summary of data and criteria used to assess Land Category

Data Sources	Proposed Category 1 – Exempt Land	(Proposed) Category 2 – Regulated Land
2009 Aerial Imagery (A.1)	Areas along roadside, cleared of woody vegetation, showing groundcover modification to road edge. Areas east, west and south of substation showing evidence of groundcover modification.	Scattered trees present (and which match woody vegetation present in 1990 as demonstrated within woody vegetation extent layer). Planted rows of vegetation west of substation, along Cooper Road and along Rogerson Road.
NGH Site Assessment, (2021) Vegetation Mapping (A.3)	Non-native vegetation dominating areas cleared of woody vegetation (BAM plots and rapid assessment determined that the composition of exotic vegetation is greater than 50%).	Scattered and planted trees / shrubs consist of predominantly native species or non-native species that are naturalised in the area and are supporting fauna.

Data Sources	Proposed Category 1 – Exempt Land	(Proposed) Category 2 – Regulated Land
1991 Aerial Imagery (A.4)	Clear evidence of groundcover modification demonstrated by machinery lines and areas of bright green vegetation along roadsides, apart from where woody vegetation is present. Minor evidence of groundcover modification west and south of substation.	Woody vegetation present equivalent to that demonstrated within woody vegetation extent layer and 2009 aerial imagery.
1997 Aerial Imagery (A.5)	In the same areas as 1991: Clear evidence of groundcover modification demonstrated by machinery lines and brown, fallow areas along roadsides, apart from where woody vegetation is present. Minor evidence of groundcover modification west and south of substation.	Woody vegetation present equivalent to that demonstrated within woody vegetation extent layer and 2009 aerial imagery.
2017 Land Use Dataset (A.6)	Within study area, areas of groundcover disturbance correspond to the following land use categories: Grazing modified pastures Cropping Transport and communication Utilities	Woody vegetation present equivalent to the following land use categories: Residential and farm infrastructure (for planted native vegetation)
NSW Woody Vegetation Extent, 2011 (A.7)	Areas containing no woody vegetation have generally remained the same since 1990 (apart from areas where more native trees have been planted).	Woody vegetation present as of 1990 inclusive of scattered trees and some patches of planted trees and shrubs.
Lismore Vegetation Mapping, 2011 (A.8)	No native vegetation mapping is present within the study area.	Native scattered trees present within the study area correspond to the Fig-Rainforest community mapped to the north of the study area by Lismore City Council. Some scattered trees are not native to the area (*Ficus microcarpa*).
Northern Rivers Vegetation Mapping,	No native vegetation mapping within or near study area.	No native vegetation mapping within or near study area.

Data Sources	Proposed Category 1 – Exempt Land	(Proposed) Category 2 – Regulated Land
2010 (not included within Appendices)		

Based on the assessment outlined in Table 1-1, **the proposed land categorisation**, including Category 1 - Exempt Land, Category 2 – Regulated Land and the publicly available mapping of Category 2 – Sensitive Regulated Land and Category 2 - Vulnerable Regulated Land, is shown in Appendix A.9.

1.4 Conclusion

The proposed land categorisation for the study area is depicted in Appendix A.9.

All scattered trees that were present in 1990 and are surrounded by disturbed land have been mapped as Category 2 – Regulated Land.

Areas containing patches or rows of planted native, woody vegetation have been mapped as Category 2 – Regulated Land.

Areas subject to groundcover modification and / or disturbance consistently from 1991 through to 2009, as demonstrated in aerial imagery from 1991, 1997 and 2009, have been mapped as Category 1 – Exempt Land. These areas have also been subject to site assessment by a BAM accredited assessor who confirmed that the groundcover vegetation is composed of more than 50% exotic vegetation (low conservation value grasslands or groundcover).

The proposed land category mapping is supported by the 2017 Land Use Dataset mapping which indicates that areas mapped as Category 1 – Exempt Land are grazing land modified by the addition of exotic pasture species, areas used for cropping or for transport and communication infrastructure.

The Category 1 – Exempt Land mapping is also supported by the NSW Woody Vegetation Extent and FPC data (2011) which indicates that areas that were cleared of woody vegetation remain consistently cleared of woody vegetation, and vice versa.

Lastly, this mapping is supported by both the Lismore and Northern Rivers Vegetation Mapping, which both contained no areas of mapped native vegetation within the study area.

1.5 Site Photographs

The photographs provide an indication of the disturbed areas and woody areas respectively within the study area.

Figure 1-1 Example of disturbed ground on roadside within the study area

Figure 1-2 Example of modified groundcover in paddock within the study area

Figure 1-3 Example of scattered native trees within the study area

Figure 1-4 Example of row of planted native trees within the study area

2. References

State Government of New South Wales and Department of Planning, Industry and Environment, 2021. *Native Vegetation Regulatory Map* www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap (accessed September 2021)

State Government of New South Wales and Department of Planning, Industry and Environment, 2021. *ePlanning Spatial Viewer* www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address (accessed September 2021)

State Government of New South Wales and Department of Planning, Industry and Environment, 2020. *NSW Land Use 2017 v1.2 Land Use Dataset (Australian Land Use and Management (ALUM) Classification version 8* https://datasets.seed.nsw.gov.au/dataset/nsw-landuse-2017-v1p2-f0ed (accessed September 2021)

State Government of New South Wales and Department of Planning, Industry and Environment, 2015. *NSW Woody Vegetation extent and Foliage Projective Cover 2011* https://datasets.seed.nsw.gov.au/dataset/nsw-woody-vegetation-extent-fpc-20119bb42 (accessed September 2021)

State of Government NSW and Department of Planning, Industry and Environment, 2010. *Vegetation Map for the Northern Rivers CMA VIS_ID 524* https://datasets.seed.nsw.gov.au/dataset/vegetation-map-for-the-northern-rivers-cma-vis_id-524fdb07 (accessed July 2021)

Lismore City Council, 2016. *Vegetation Map of Lismore Local Government Area, 2011. VIS_ID 4479*

https://datasets.seed.nsw.gov.au/dataset/vegetation-map-of-lismore-local-government-area-2011-vis_id-4479 (accessed July 2021)

State of New South Wales (Spatial Services, a business unit of the Department of Customer Service) NSW, 2021. *Historical Imagery Viewer*

https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb (accessed September 2021)

State of New South Wales (Spatial Services, a business unit of the Department of Customer Service) NSW, 2021. S*ixMaps* https://maps.six.nsw.gov.au/ (accessed September 2021)

Appendix A Land Category Assessment Mapping

A.1 Development Site and Land Categorisation (publicly available layers)

Development Site and Land Categorisation (publicly available)

Legend

- Study area surrounding development site
- Substation
- Roads
- Waterways
- Lot

Native Vegetation Regulatory Map

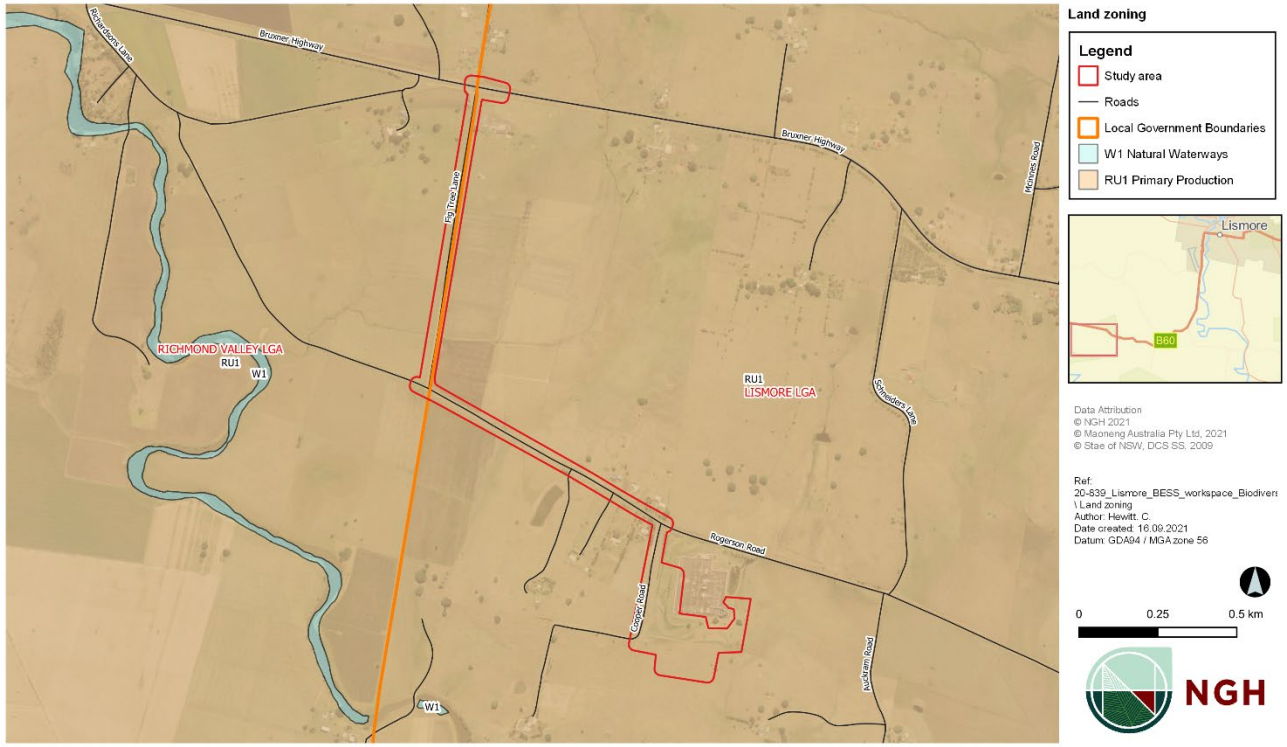
- Category 2 - Vulnerable Regulated Land

0 200 400 m

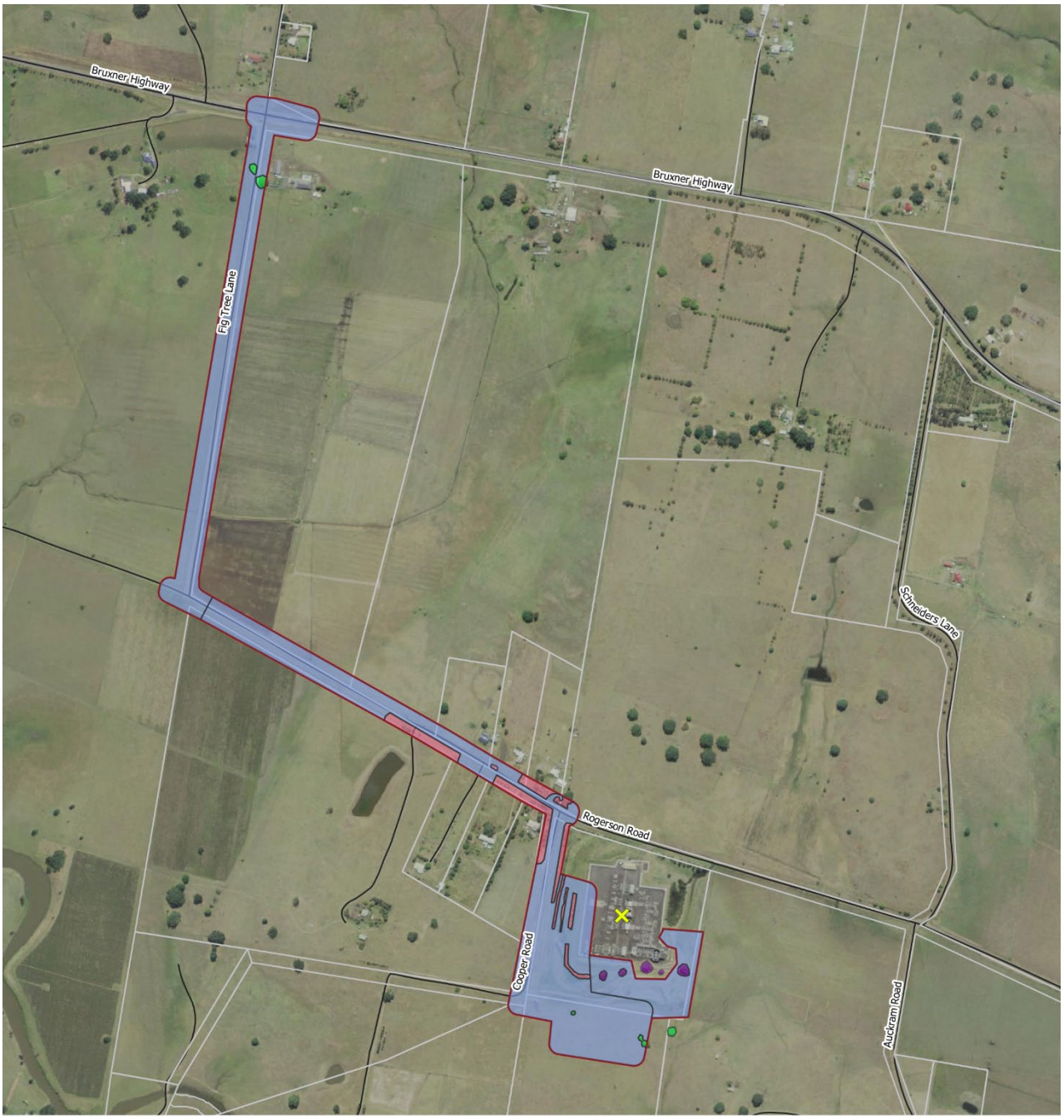
Ref:
20-839_Lismore_BESS_workspace_Biodivers
\ Development Site and Land Categorisation
Author: Hewitt. C.
Date created: 17.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.2 Land Zoning



A.3 NGH Site Assessment Vegetation Mapping



NGH Site Assessment Vegetation Mapping

Legend

- Study area
- Substation
- Roads
- Lot

Plant Community Types

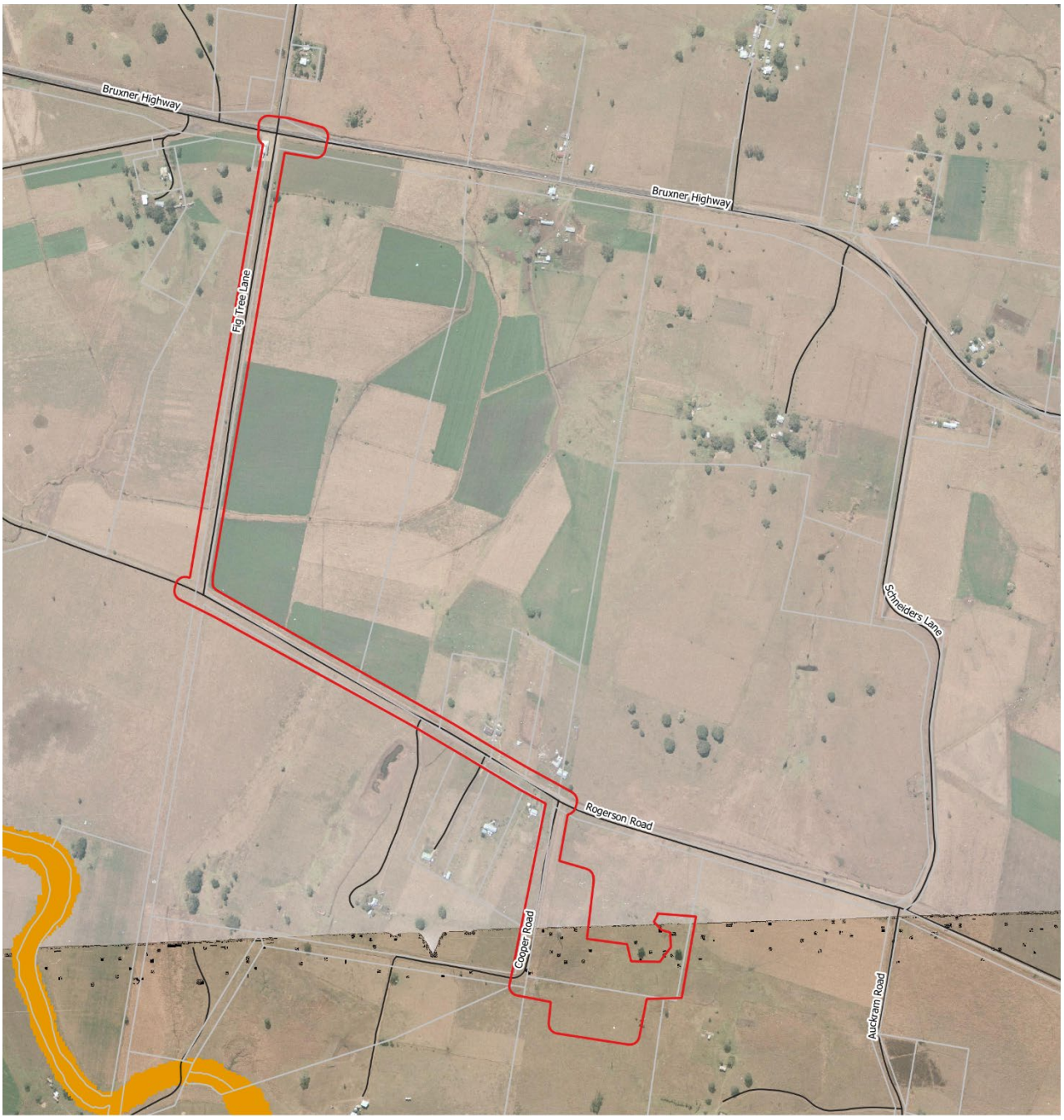
- Scattered native trees (PCT 1068 - Pepperberry - Giant Stinging Tree - Fig lowland rainforest)
- Planted native trees
- Exotic vegetation
- Non-native scattered tree

0 250 500 m

Ref:
20-839_Lismore_BESS_workspace_Biodivers
\ NGH Site Assessment Vegetation Mapping
Author: Hewitt. C.
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.4 Aerial Imagery 1991



1991 Aerial Imagery

Legend

- Study area
- Lot
- Substation
- Roads

Native Vegetation Regulatory Map

- Category 2 - Vulnerable Regulated Land

0 100 200 300 400 m

Ref:
20-839_Lismore_BESS_workspace_Biodivers
\ 1991 Aerial Imagery
Author: Hewitt. C.
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.5 Aerial Imagery 1997

1997 Aerial Imagery

Legend

- Study area
- Lot
- Substation
- Roads

Native Vegetation Regulatory Map

- Category 2 - Vulnerable Regulated Land

0 100 200 300 400 m

Ref:
20-839_Lismore_BESS_workspace_Biodivers
\ 1997 Aerial Imagery
Author: Hewitt. C.
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.6 Land Use Dataset 2017

Land Use

Legend

- Study area
- Lot
- Roads

Land Use

- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 5.4.0 Residential and farm infrastructure
- 5.6.0 Utilities
- 5.7.0 Transport and communication
- 6.3.0 River

0 100 200 m

Ref: 20-839_Lismore_BESS_workspace_Biodivers
\ Land Use
Author: c.hewitt
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

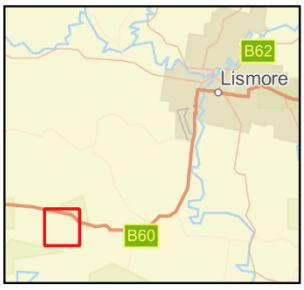
A.7 Woody Vegetation Extent and FPC (2011)

Woody Vegetation and FPC

0 100 200 300 400 m

Legend
- Study area
- Roads
- Lot

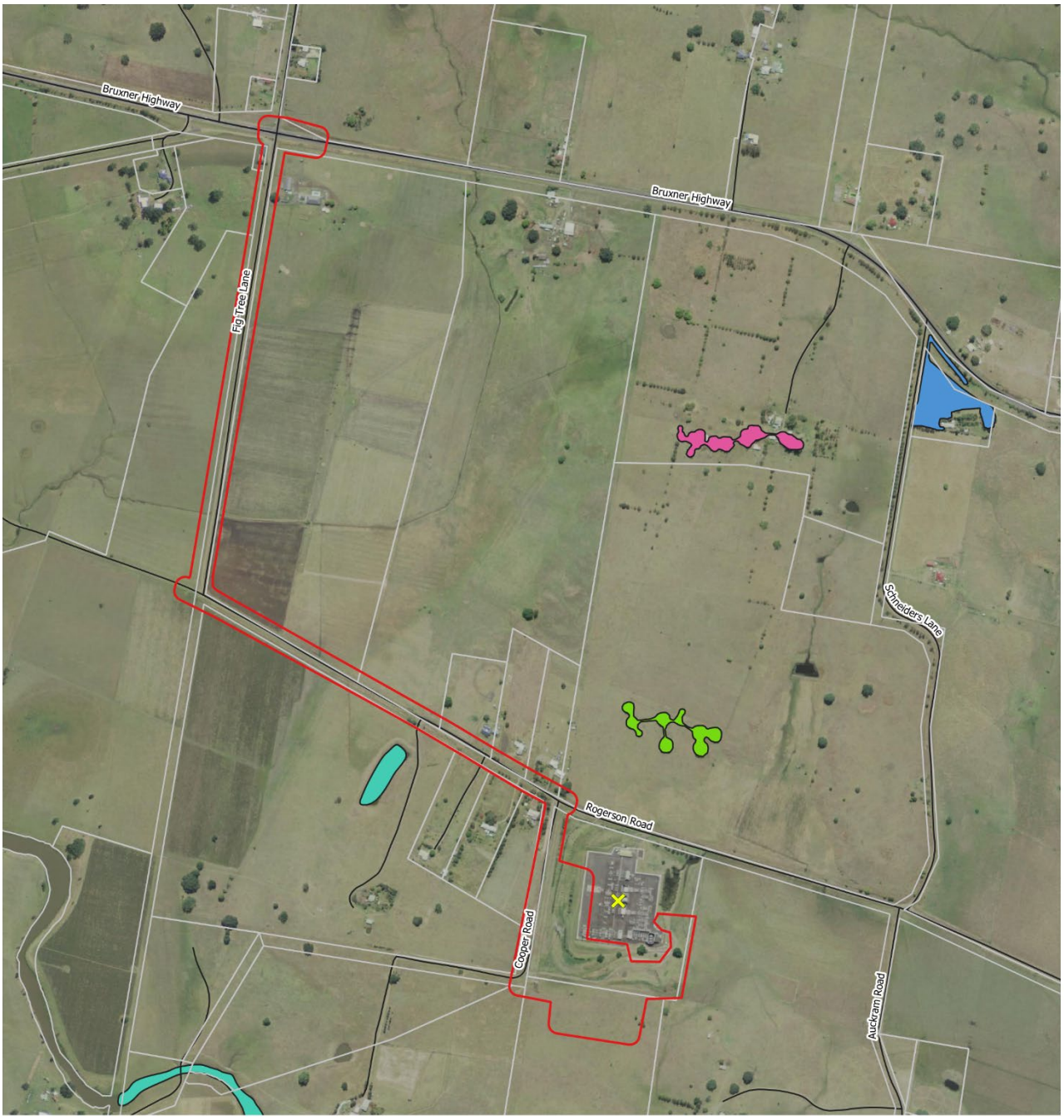
Vegetation Type
- Non-woody Vegetation
- Woody Vegetation



Ref:
20-839_Lismore_BESS_workspace_Biodivers
\ Woody Vegetation
Author: c.hewitt
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.8 Lismore Vegetation Mapping (2011)



Lismore Vegetation Mapping

Legend

- Study area
- Substation
- Roads
- Lot

Lismore Vegetation Mapping, 2011

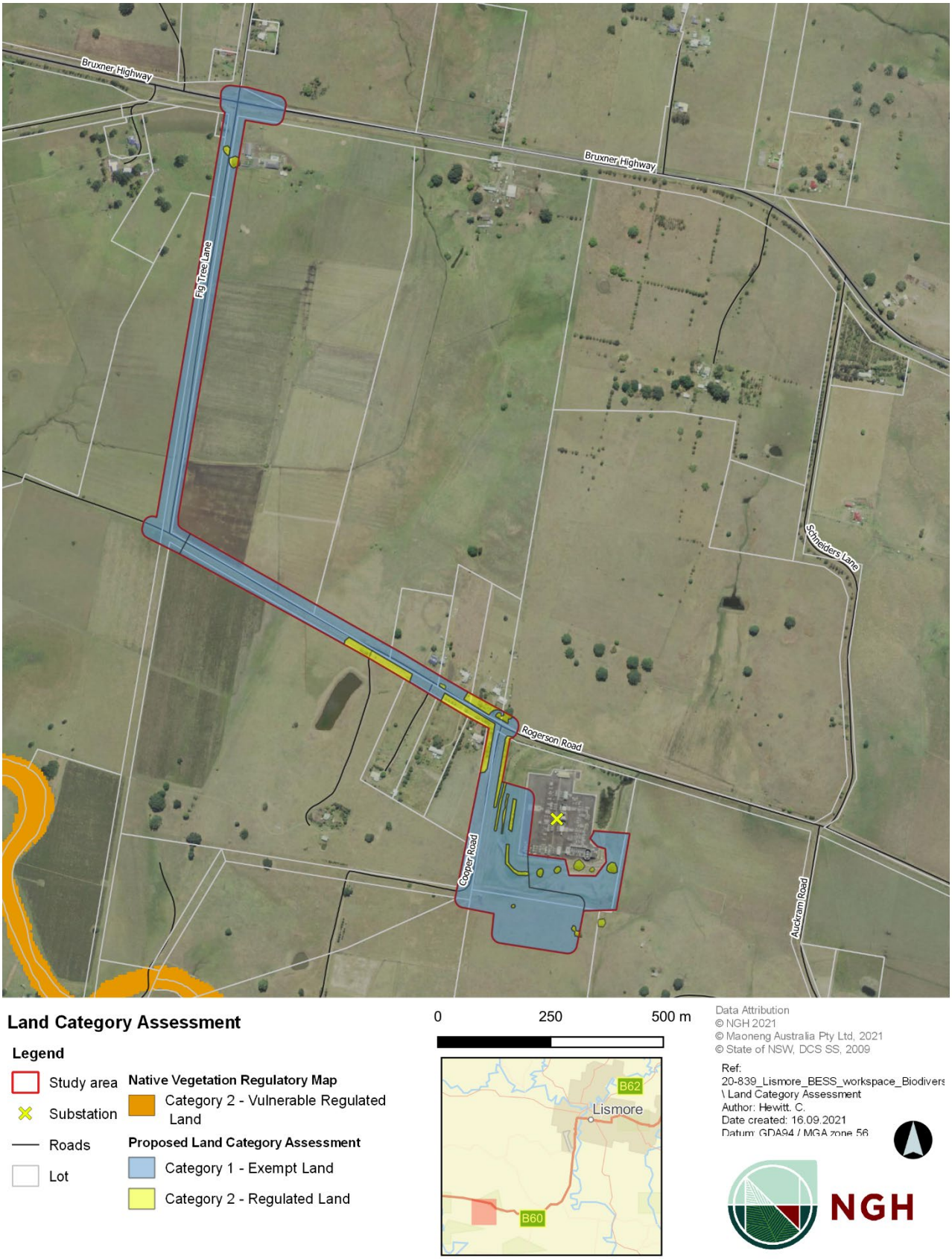
- Fig
- Fig-Rainforest
- Open Water
- Plantation

0 100 200 300 400 m

Ref:
20-839_Lismore_BESS_workspace_Biodiversity_202
\ Lismore Vegetation Mapping
Author: Hewitt. C.
Date created: 16.09.2021
Datum: GDA94 / MGA zone 56

NGH

A.9 Proposed Land Categorisation



A.2 Land category assessment approval

From: Dimitri Young
To: Claire Hewitt
Cc: Krister Waern
Subject: BCD Response - RE: 20-839 - Lismore BESS
Date: Thursday, 4 November 2021 4:09:47 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.jpg
image006.jpg
48f78e17-ba1c-4064-ab56-7f385bb6154d.png
image007.jpg

Dear Ms Hewitt

Thank you for your e-mail below about the battery energy storage system site south-west of Lismore and a Land Category Assessment, seeking comments from the Biodiversity and Conservation Division (BCD) of the Biodiversity, Conservation and Science Directorate in the Environment, Energy and Science Group of the Department of Planning, Industry and Environment. I appreciate the opportunity to provide input.

We have reviewed the Land Category Assessment report prepared by NGH dated September 2021. In undertaking our review we have sought advice from our mapping review team, which is responsible for preparing the Native Vegetation Regulatory map.

I am pleased to advise that we generally agree with the land category assessment undertaken for the site.

We look forward to working with you on the next steps of this project.

If you have any questions about this advice, please contact Mr Krister Waern, Senior Operations Officer, at krister.waern@environment.nsw.gov.au or 6640 2503.

Yours sincerely

Dimitri Young
Senior Team Leader Planning, North East Branch

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From: Claire Hewitt <claire.h@nghconsulting.com.au>
Sent: Wednesday, 6 October 2021 11:52 AM
To: EES BCD Planning North East Mailbox <planning.northeast@environment.nsw.gov.au>
Cc: Hannah Weiss <hannah.w@nghconsulting.com.au>

Subject: 20-839 - Lismore BESS

To whom it may concern,

NGH are undertaking preliminary investigations for a potential battery energy storage system site approximately 20km south-west of Lismore. We were hoping that you would be able to review a Land Category Assessment we have completed for the site, as attached.

A review and feedback from BCD will be used to inform future investigations at the site.

Please let me know if you require any further information.

Kind regards,
Claire

CLAIRE HEWITT
SENIOR ECOLOGIST
M.Sc., Accredited BAM Assessor (*BAAS20009*).
Please note that I work Tuesday to Friday.
M. 0481 146 076 **T:** 02 6629 3418 (Thurs / Fri)
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PO Box 466 Tugun QLD 4224

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NGH acknowledges that we work on the traditional lands of First Nations people across Australia and recognises the enduring connection to the land. We pay our respects to elders, past present and emerging.

Appendix B BAM calculator reports

B.1 BAM calculator predicted species report

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029374/BAAS20009/21/00029375	20-839 Lismore Battery Energy Storage System	24/11/2021
Assessor Name	Report Created	BAM Data version *
Claire Hewitt	15/12/2021	50
Assessor Number	BAM Case Status	Date Finalised
BAAS20009	Open	To be finalised
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Barking Owl	Ninox connivens
Barred Cuckoo-shrike	Coracina lineata
Dusky Woodswallow	Artamus cyanopterus cyanopterus
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis
Eastern False Pipistrelle	Falsistrellus tasmaniensis
Northern Free-tailed Bat	Ozimops lumsdenae
White-throated Needletail	Hirundapus caudacutus
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C