Australian Government
Department of the Environment and Energy

Title of Proposal - Coppabella Wind Farm

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Energy Generation and Supply (renewable)

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Project Infrastructure:
This referral is to seek approval for a wind farm of up to 76 wind turbines with associated access tracks based on realistic design and including passing lanes, 33kV internal electrical reticulation system, grid connection components at 132kV (substation, 8km of 132kV transmission line and possible switchyard), permanent meteorological (met) masts, operations and maintenance building and temporary construction infrastructure. The temporary infrastructure includes construction compounds, laydown areas, batch plants and stockpile and crushing areas.

Upper limit number of wind turbines:
Subject to gaining consent for the NSW Modification Application as lodged, the revised project would involve up to 79 turbines with increased dimensions and, an increased footprint that is based on recent detailed civil works design. However, since the modification application was lodged, CWFPL has considered the removal of three turbines (75, 76 & 77) and their associated hardstands and tracks. The modified consent with removal of these three turbines and their associated hardstands and tracks results in a 76 turbine layout.

As a result of the reduction of turbines to 76 for the NSW Modification Application, this referral also seeks approval for the 76 turbine layout but notes that some of the supporting information for this referral has been prepared in respect of the 79 turbine layout. The following provides an explanatory note on the layout used for the respective parts of the assessments provided with this referral.

A 76 turbine layout, (which excludes Turbines 75, 76 & 77) has been used for assessing the impacts specific to MNES, detailed further in Section 5.1.1 of the attached Technical Report (5 EPBC TR). Associated mapping and impact areas for relevant MNES (Critically Endangered Ecological Communities (EEC), Superb Parrot, Swift Parrot and Regent Honeyeater, Koala) similarly assume the removal of these Turbines 75, 76 & 77.

Elsewhere in this Technical Report, the 79 turbine layout is shown and discussed. Specifically:
The broader project breakdown, presented in Table 1-1, is for all 79 turbines.
The assessment of bird and bat collision risks in Section 5.2 is for all 79 turbines.
The NSW endorsed offset calculations presented in Section 7.3 are for all 79 turbines.

In this manner, the information presented in this report provides the most accurate estimate of MNES impacts while being as consistent as possible with the existing material being considered for the NSW Modification Application.

Wind turbine dimensions:
The wind turbine model is subject to confirmation but the GW140 has been used a reference model for all impact assessment and yield modelling. This model's parameters include:
Rotor diameter up to approximately 142m
Hub height up to approximately 100m
Maximum height of rotor swept area approximately 171m
Minimum height of rotor swept area approximately 29m

Construction impacts – clearing:
The construction footprint is estimated as 362.29 ha which includes a 5m buffer to account for potential disturbance during construction, such as installation of sediment erosion controls. This figure is derived from a detailed civil engineering design, taking into account realistic cut and fill batters for the terrain and larger turbines turning arcs. This is considered a 'worst case' given not all of the 79 turbines will be developed and that not all of the buffer area will involve disturbance.

The location of the site and the proposed infrastructure layout is shown in the attached Technical Report (5 EPBC TR). As the clearing is derived from a civil works footprint, it is not possible to separate out all infrastructure components. Refer to Table 1-1 of the Technical Report for a breakdown of civil works (tracks, turbine footings and hardstands), cabling and overhead power lines. No additional clearing is required (such as for asset protection zones).

The project site is within the western part of the area of a prior referral EPBC 2013/7002 that combined the Coppabella, Marilba and 330kV precincts. The Marilba and 330kV precincts were excluded from the NSW planning approval (Development Consent SSD 6698). All infrastructure would now be within the Coppabella precinct project boundaries approximately 6,445 ha. Additional impacts to short sections of Whitefields Road would also be required. There would be up to eleven host landowners (refer to 8 EPBC TR A3).

Construction impacts – road upgrades:
The main access to the project area will be from the eastern end of Whitefields Road (Figure 3-3 of Technical Report) and involve approximately 1.3 km of Whitefields Road from the Hume Highway to a property entrance where on-site access tracks will be used. Whitefields Road would be upgraded as part of the project but as per Schedule 3, Condition 27 of the Consent, CWFPL is required to minimise impact and the detailed design for upgrade must include a landscaping plan. The clearing required for Whitefields Road is included in the civil works footprint above (Table 1-1 of Technical Report).

Access to the 132 kV line route, to the northwest of the project will be from Coppabella Road with access via Binalong, Garry Owen Road and the northern section of Coppabella Road. Items transported by this route would include pole sections, conductors, insulators, fittings and various installation equipment to enable the construction of the northern section of the 132 kV transmission line. Only minor upgrades of Coppabella Road are anticipated and these would be

subject to Council approval.

Minor upgrades are also proposed for a short section (approximately 2 km) of Coppabella Road to enable better internal access within the wind farm. The section of Coppabella Road is between two wind farm access tracks that cross Coppabella Road, between Turbine 60 and 130 at the southern end and the access track between Turbine 68 and 128 at the northern end of the short section of Coppabella Road. Pre-construction planning and design studies have indicated that access in this location will reduce access time across the site. No trees are required to be removed for this upgrade.

Reuse of excavated material, staging, subdivision, decommissioning and the similarity of this referral with the existing Yass Valley Wind Farm Controlled Action (EPBC 2013/7002) are detailed in Section 1.4 and 1.5 of the attached Technical Report (5 EPBC TR).

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
Project Boundary	1	-34.745756679298	148.54238331578
Project Boundary	2	-34.745051414833	148.53345692417
Project Boundary	3	-34.759578647145	148.53225529454
Project Boundary	4	-34.759437618339	148.53019535801
Project Boundary	5	-34.769027028314	148.52916538975
Project Boundary	6	-34.767616890831	148.51663410923
Project Boundary	7	-34.766347746497	148.5161191251
Project Boundary	8	-34.765642657879	148.50873768589
Project Boundary	9	-34.767757905663	148.50805104039
Project Boundary	10	-34.767757905663	148.50358784458
Project Boundary	11	-34.766347746497	148.50427449009
Project Boundary	12	-34.770155120954	148.49757969639
Project Boundary	13	-34.775090344949	148.49569142124
Project Boundary	14	-34.77382131554	148.48693669102
Project Boundary	15	-34.767475875757	148.48796665928
Project Boundary	16	-34.765924694049	148.46942723057
Project Boundary	17	-34.763245311527	148.46959889195
Project Boundary	18	-34.762258148675	148.48230183384
Project Boundary	19	-34.757040091791	148.48127186558
Project Boundary	20	-34.755911819915	148.47234547398
Project Boundary	21	-34.745474574235	148.47183048985
Project Boundary	22	-34.745615626887	148.46925556919
Project Boundary	23	-34.738139504437	148.4699422147
Project Boundary	24	-34.738421634548	148.4721738126
Project Boundary	25	-34.734189581734	148.47286045811

Area	Point	Latitude	Longitude
Project Boundary	26	-34.734048509574	148.46393406651
Project Boundary	27	-34.728828670366	148.46496403477
Project Boundary	28	-34.729392993201	148.47337544224
Project Boundary	29	-34.721915402968	148.47234547398
Project Boundary	30	-34.713731604626	148.48247349522
Project Boundary	31	-34.707875458739	148.48676502964
Project Boundary	32	-34.708157692147	148.49397480748
Project Boundary	33	-34.704065213492	148.496034744
Project Boundary	34	-34.708863271453	148.50599110386
Project Boundary	35	-34.704770827704	148.50753605625
Project Boundary	36	-34.695597373554	148.50873768589
Project Boundary	37	-34.696303059979	148.51268589756
Project Boundary	38	-34.693339136556	148.518350723
Project Boundary	39	-34.695315097299	148.52332890293
Project Boundary	40	-34.694327122825	148.52899372837
Project Boundary	41	-34.689951665529	148.52985203526
Project Boundary	42	-34.69122198341	148.5399800565
Project Boundary	43	-34.701666080157	148.53929341099
Project Boundary	44	-34.701807207573	148.54118168614
Project Boundary	45	-34.708157692147	148.54118168614
Project Boundary	46	-34.708157692147	148.54358494541
Project Boundary	47	-34.715495422736	148.54341328404
Project Boundary	48	-34.716342042067	148.54564488194
Project Boundary	49	-34.712673295703	148.54650318882
Project Boundary	50	-34.728899210931	148.56349766514
Project Boundary	51	-34.741172352646	148.58117878697
Project Boundary	52	-34.743147170702	148.58461201451
Project Boundary	53	-34.737081507941	148.58667195103
Project Boundary	54	-34.738774295832	148.58959019444
Project Boundary	55	-34.736799373254	148.5928517606
Project Boundary	56	-34.738633231499	148.59628498814
Project Boundary	57	-34.741031292408	148.60212147496
Project Boundary	58	-34.742582941788	148.60315144322
Project Boundary	59	-34.746391412168	148.59971821568
Project Boundary	60	-34.748225057507	148.60040486119
Project Boundary	61	-34.747378764716	148.60538304112
Project Boundary	62	-34.763033777624	148.60229313633
Project Boundary	63	-34.761341486886	148.59885990879
Project Boundary	64	-34.764585013659	148.59903157017
Project Boundary	65	-34.762328660699	148.58512699864
Project Boundary	66	-34.76980259366	148.58461201451
Project Boundary	67	-34.773186793517	148.60606968663
Project Boundary	68	-34.794193928685	148.60160649082
Project Boundary	69	-34.792361304418	148.58186543248
Project Boundary	70	-34.800537313551	148.58255207798
Project Boundary	71	-34.798000018172	148.56813252232

Area	Point	Latitude	Longitude
Project Boundary	72	-34.78192866745	148.56916249058
Project Boundary	73	-34.780659743218	148.55663121006
Project Boundary	74	-34.762046612243	148.55851948521
Project Boundary	75	-34.760918408781	148.55182469151
Project Boundary	76	-34.749212388136	148.55302632115
Project Boundary	77	-34.748930294875	148.55062306187
Project Boundary	78	-34.753020552863	148.55062306187
Project Boundary	79	-34.75259743212	148.54633152745
Project Boundary	80	-34.75062283999	148.54701817295
Project Boundary	81	-34.75062283999	148.54478657505
Project Boundary	82	-34.749071341626	148.54530155918
Project Boundary	83	-34.748930294875	148.54169667027
Project Boundary	84	-34.745545100591	148.54238331578
Project Boundary	85	-34.745545100591	148.5422116544
Project Boundary	86	-34.745756679298	148.54238331578

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The site is located on farmland north of the Hume Highway, approximately 35 kilometres west of Yass, New South Wales. The area is characterised by undulating to hilly terrain with broken ridgelines, mostly on geology comprising meta-volcanics.

The site consists of elevated ridgelines and hills in the Bookham, Binalong, Berremangra locality spanning parts of Yass Valley and Hilltops Local Government Areas. The construction footprint contains a combination of native and exotic pasture and remnant and regrowth woodland. The ridgelines within the subject site are mostly cleared and have been grazed for many decades and generally carry only scattered remnant trees or small isolated woodland patches.

The site is situated in the upper catchment of Jugiong Creek within the broader Murrumbidgee Catchment. There are no major watercourses present at the subject site and there is little remnant tree cover. Several small or intermittent watercourses drain the site to the Jugiong Creek system that joins the Murrumbidgee near Jugiong below Burrinjuck Dam. Average annual rainfall for the site is approximately 600 – 659 mm (BOM 2017).

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

362.29ha

1.7 Is the proposed action a street address or lot?

Street Address

Whitefields Road
Bookham NSW 2582
Australia

1.8 Primary Jurisdiction.

New South Wales

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 05/2018

End date 03/2020

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

NSW:

Assessment of the NSW project application took place over several years from December 2008 through to determination of the application on 30 March 2016. That process involved various iterations of the project, with the initial proposal containing over 200 wind turbines, while the approved project comprises up to 79 turbines. The project area was substantially reduced for the approved project area which comprises only the Coppabella precinct (Development Consent SSD 6698).

The current status of the NSW approval is that a Modification Application (MOD 1) has been lodged under Section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project is substantially the same as the approved project. The proponent is currently considering submissions following the public exhibition and referral to government agencies and is now proposing a 76 turbine layout.

Commonwealth:

Separately, a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) was made for the Yass Valley Wind Farm (EPBC 2013/7002). The project was determined to be a controlled action and Commonwealth approval for a project involving 126 wind turbines was granted on 5 November 2014.

This new referral is now being made to reflect changes currently being considered by the NSW Department of Planning and Environment, for the now named the Coppabella Wind Farm (MOD 1). The new referral is for 76 turbine locations, larger turbine dimensions, and reflects the outcomes of further biodiversity assessments and current listing of MNES.

Refer to attached EPBC Technical Report, Appendix A1 (attached as 6 EPBC TR A1), for the approved and modified Coppabella Wind Farm infrastructure layout (79 turbines).

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

An important context to the detailed planning of the construction-ready project is community consultation. Consultation was initiated for the original planning application that covered the Coppabella, Marilba and 330kV Precincts. The exhibition of the original planning application received a low number of submissions. The Preferred Project Report was exhibited from 14 December 2012 to 1 March 2013 and received 17 submissions, of which 8 were from individuals and 9 from Government agencies. Consultation for the larger project was undertaken through to gaining of consent and included a Community Consultative Committee that was established from March 2013.

Regarding the modified project now proposed, prior to the NSW public exhibition period, a notification was issued via the post to all neighbours up to 10km of the project. During the public exhibition period, associated documentation was available in hard copy at the Local Council Offices (Yass Valley Council and Hilltops Council) as well as at the local Binalong Post Office. Documentation was also available online at the project website. A dedicated 1800 telephone line, email address and postal address will be available for any enquiries related to the application.

Community consultation in 2017:

Following acquisition of the project in February 2017, community consultation has focussed on engaging with near neighbours to the project area (landowners that own residences up to 5km from an approved turbine location). Engagement with near neighbours has focussed on the following discussion areas:

Listening to feedback and observations on the project to date:

Details around pre-construction planning, including information on internal road design and optimal turbine model, including the potential for an increased tip height, and

Discussion regarding the most effective way to engage those members of the community most

affected by the wind farm moving forward.

This engagement has included over 50 face-to-face meetings between representatives of the proponent and near neighbours. Where face-to-face meetings were not possible, consultation has been undertaken over the phone, via emails and letters.

In addition to direct consultation with representatives of the proponent, a specialist community engagement consultancy was appointed to undertake a community context review of the local area and provide suggestions for future engagement based on the local context, interviews with local community members, previous engagement undertaken for the project and best practice case studies.

Based on the feedback received from the initial engagement with near neighbours, qualitative data from the community context review and previous experience as a proponent of other wind energy projects in NSW, a stakeholder and community engagement plan (the Plan) including a neighbour benefit sharing strategy and a community benefit sharing strategy has been developed for CWF to guide all engagement activities.

Stakeholder and Community Engagement Plan:

A Stakeholder and Community Engagement Plan has been developed and is being implemented for the project. It identifies project stakeholders, identifies the local community context and describes in detail engagement tools to be used throughout all phases of the project.

A key feature of the Plan includes a neighbour benefit sharing strategy (which is currently being developed). This includes offering neighbour agreements to up to 60 residences that have been identified as eligible within the neighbour benefit sharing strategy. The neighbour agreements recognise the impacts that the wind farm may have on near neighbours to the project and outlines a process for raising any concerns for the entire life cycle of the project. As of August 2017, 35 neighbour agreements have been offered as part of the strategy. An annual payment is attached to the neighbour agreements based on distance proximity of a residence from an approved turbine location.

In parallel with the neighbour benefit sharing strategy, a community benefit sharing strategy is currently being developed. Discussions have been undertaken with 16 local community groups and schools regarding opportunities for the project to be an active member of the local community and provide financial assistance and support. As of August 2017, the project has provided financial support through a sponsorship fund to 10 community initiatives and events in the local area.

Once the project becomes operational, a community fund will be established with payments per installed turbine each year, for the entire life cycle of the project. Coppabella Wind Farm will work with the Community Consultative Committee (CCC) to develop the framework and structure for the fund. The Yass Valley Council and the Hilltops Council will administer the community fund based on the installed turbines within each specific Local Government Area.

Community Consultative Committee (CCC):

Schedule 4 of the NSW Development Consent requires the proponent to establish a CCC for the life of the project. The CCC was established in March 2013. The most recent CCC meeting was held in October 2017.

Landowner consultation:

At this stage, it is anticipated that approximately eleven landowners will host project infrastructure such as wind turbines or ancillary infrastructure such as access tracks. Following acquisition of the project on 8 February 2017, targeted consultation has been undertaken with host landowners. A briefing providing a high-level overview of the pre-construction planning process and timeline, including information on internal road design and optimal turbine model with a potential for an increased tip height was provided to all involved landowners in February/March 2017. All landowners were directly consulted regarding the internal road design that was specific to their property within the project area. Additionally, a detailed briefing on the internal road design was given to host landowners in August 2017.

Indigenous consultation:

The assessments for CWF have been undertaken in consultation with Aboriginal stakeholders and the Aboriginal Heritage Management Plan circulated for review and comment by the stakeholders.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

All environmental impact assessments have been completed for the NSW and Commonwealth matters. Extensive assessment of the biodiversity values at the Coppabella Wind Farm site has been undertaken for over 10 years with surveys from 2007 and underpins the assessment of impacts on MNES. The survey work completed and reports produced that are relevant to MNES are summarised in Section 2 of the attached Technical Report.

1.15 Is this action part of a staged development (or a component of a larger project)?

Yes

1.15.1 Provide information about the larger action and details of any interdependency between the stages/components and the larger action.

The project includes the development of up to 76 wind turbines and ancillary infrastructure. The project may be developed in stages. The actual extent of staging and scope of project components for individual stages will be confirmed prior to the commencement of the stage of construction and the conditions of consent will be addressed relative to the extent of the stage

being undertaken. It is not part of a larger project. Marilba and Conroys Gap precincts are no longer part of the project.

1.16 Is the proposed action related to other actions or proposals in the region?

No

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
BGW CEEC	Loss of 3.23 ha of CEEC by direct impacts and

Species	Impact
	an additional 3.62 ha of indirect impacts (using a 30m buffer to determine indirect impacts). Impacts may be significant.
Superb Parrot	Loss of 60 ha of preferred habitat including 76 hollow bearing trees. Collision risk low. Loss of habitat may be significant.
Regent Honeyeater	Loss of 2.5 ha of preferred habitat (not known from the site but potential habitat has been modelled). Collision risk low. Impacts unlikely to be significant.
Swift Parrot	Loss of 2.5 ha of habitat (not known from the site but potential habitat has been modelled). Collision risk low. Impacts unlikely to be significant.
Koala	Loss of 42 ha of habitat (not known from the site but potential habitat has been modelled). Impacts unlikely to be significant.
Painted Honeyeater	Loss of 3 ha of habitat (not known from the site but potential habitat has been modelled). Collision risk low. Impacts unlikely to be significant.

2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Cattle Egret	Loss of 33 ha of marginal pasture habitat (not known from the site but potential habitat has been modelled). Collision risk low. Impacts unlikely to be significant.
Great Egret	Loss of 33 ha of marginal pasture habitat (not known from the site but potential habitat has been modelled). Collision risk low. Impacts unlikely to be significant.
Rainbow Bee-eater	Loss of 0.3 ha of habitat (riparian forest).

Species	Impact
	Collision risk low. Impacts unlikely to be significant.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Flora

An EPBC Protected Matters Search was conducted on the 3 November 2017 with a 50km radius of the proposed site, 11 threatened flora species were identified. Of these, one is critically endangered (Pterostylis oreophila, Blue-tongued Orchid), 6 are endangered, and two are listed as vulnerable (NPWS 2017).

There are a number of grassland and grassy woodland species which are of regional conservation significance due to the general depletion of these communities. These species include Zornia (*Zornia dyctiocarpa*), Australian Anchor Plant (*Discaria pubescens*), Emu-foot (*Cullen tenax*), Mountain Swainson-pea (*Swainsona monticola*), Wedge Diuris (*Diuris dendrobioides*), Purple Diuris (*D. punctata* var. *punctata*), Hairy Buttons (*Leptorhynchos elongatus*), Austral Trefoil (*Lotus australis*), Yam Daisy (*Microseris lanceolata*), *Picris* species, a milkwort (*Polygala japonica*) and Wild Sorghum (*Sorghum leiocladum*) (ACT Government 2004). These species may occur on less disturbed remnants in the Yass area, however none were recorded within areas to be impacted.

Fauna

Widespread vegetation clearing has caused a decline in woodland-dependent bird, reptile and insect populations. Woodland bird species such as the endangered Regent Honeyeater (*Anthochaera phrygia*) have noticeably declined (Australian Terrestrial Biodiversity Assessment 2002 in NPWS 2003) as a result of landscape fragmentation. A decline in ground feeding insectivores was recently observed in the bioregion (Australian Terrestrial Biodiversity Assessment 2002 in NPWS 2003). Some bird species such as the Noisy Miner (*Manorina melanocephala*), Australian Magpie (*Gymnorhina tibicen*) and Grey Butcherbird (*Cracticus torquatus*) have substantially increased, consistent with the effects of long term fragmentation (NPWS 2003).

Waterbirds are likely to move between large waterbodies and wetland habitats at the region scale. Lake George (c. 65 kilometres east of the subject site), Lake Burley Griffin and associated wetlands (10-25 kilometres to the south), Lake Burrinjuck (50 kilometres to the south) and major rivers in the region are likely to form part of the foraging range for several mobile waterbird species. Most wetland bird species in the region show signs of long-term decline (Reid *et al.* 2004). Seasonal wetland and swamp habitats have declined throughout the region due to increasing irrigation and water extraction from rivers, increased small dams and

increased use of deep-rooted perennial pastures resulting in reduced runoff. Most wetland bird species in the region show signs of long-term decline (Reid *et al.* 2004).

106 species of fauna were identified in the 2009 survey of the site. This consisted of 77 birds, 4 amphibians, 17 mammals and 8 reptiles. The 2009 Biodiverty Assessment is appended (14 EPBC TR B1).

One threatened fauna species, the Superb Parrot, and one migratory species, the Rainbow Bee-eater have been identified on site. The Superb Parrot is listed as Vulnerable on the Commonwealth EPBC Act. Rainbow Bee-eater is listed as migratory on the EPBC Act. The Golden Sun Moth is listed as Critically Endangered and ocurrs in the locality but is not found onsite.

3.2 Describe the hydrology relevant to the project area (including water flows).

Coppabella Hills occur within the mid Murrumbidgee Catchment north of the Murrumbidgee River, which is the largest river in the vicinity. The Murrumbidgee River catchment is a major component of the Murray-Darling Basin, joining the Murray River at Balranald, with an area of 84,000 square kilometres. The Murrumbidgee catchment has a diverse range of landscapes, and significant agricultural, social and conservation values.

Coppabella Hills is located within the Jugiong Creek and Illalong Creek sub catchments of the mid Murrumbidgee catchment. The major creek within these catchments is Jugiong Creek. There are a number of small creeks that flow into Jugiong Creek which is the primary exit point for water in these sub-catchments to flow into the Murrumbidgee River. The Murrumbidgee flows in a general east to west direction.

Jugiong Creek, a tributary of the Murrumbidgee River is located approximately 1.8kms to the north of the closet portion of the Coppabella Hills Precinct. Coppabella Hills Creek is located to the south of the Coppabella Hills Precinct adjacent to Whitefields Road. Stony Creek, a small tributary of Jugiong Creek, runs in a general north – south direction within the Coppabella Hills Precinct. There are also a number of unnamed drainage lines that traverse the landscape of the Coppabella precinct with the potential to be impacted by the proposal.

Creeks with the potential to be impacted during the proposed works to the access road are: Coppabella Creek, Bald Hill Creek and Deep Stony Watercourse. Creeks with the potential to be impacted during the proposed works to the transmission easement are: Jugiong Creek, Two Mile Creek and Balgalal Creek. Creeks with the potential to be impacted during the proposed works to the both the access track and transmission easement are: Stony Creek and Bushrangers Creek.

The local drainage system within these precincts is defined as “waters’ in accordance with Section 120 of the POEO Act.

Groundwater:

A number of registered groundwater bores are located within the general area of Coppabella Hills. It is likely that residents within the local vicinity of the development area are likely to have their own supply of water for both domestic and agricultural use. It is likely that a number of properties extract water from groundwater bores. The Department of Water and Energy indicated that the vast majority of groundwater registered bores located in the area, both within the Yass Valley and Harden LGAs would be extraction bores for irrigation purposes (pers. comm. M. Mitchell, DWE 17 Dec 2008).

3.3 Describe the soil and vegetation characteristics relevant to the project area.

Soil characteristics:

The landscape within the Coppabella Hills Precinct is generally steep with granite rock outcrops. The soil landscapes which occurs within the development envelope are Oak Creek, Cockatoo, Binalong and Canowindra. With the exception of Canowindra, soils across Coppabella Hills have erosion potential ranging from high to extreme. Gullying on the slopes and foothills is evident.

Soil landscapes within Coppabella Hills:

Murringo (mu): occurs on crests and side slopes moderately deep gradationally textured and duplex red soils. Yellow earths and yellow podzolic soils occur on foot slopes with yellow soldic soils in some drainage lines. Occurs in undulating to rolling low hills with slope gradients generally between 5% and 25%. The Murringo soil landscape has a moderate erosion potential.

Oak Creek (oc): shallow siliceous sands and shallow sandy Red Earths occur on crests and side slopes with minor red and yellow sandy podzolic soils on lower slopes. Oak Creek soils are located on steep hills of elevations varying from 600-750 metres with slope gradients of 30-50%. The Oak creek soil landscape on sandy earths have a high erosion hazard.

Cockatoo (ct): Cockatoo soil landscapes are found on small rocky hills. The soils are shallow to moderately deep, brightly coloured red and yellow gradationally textured soils with weak to occasionally moderate structure. Cockatoo soils are located on rolling low hills and hills with local relief between 60-150 m and gradients varying between 10-30%. The Cockatoo soil landscape has a high erosion potential.

Binalong (bi): moderately deep, bright yellowish brown gradationally or occasionally duplex textured, weakly to moderately structured occur on crests and side slopes. Yellow podzolic soils occur on the lower slopes. Local relief within the unit varies between 30-90 metres with slope gradients between 3-10%. Podzolic soils of the foot slopes have high erosion potential.

Canowindra (cd): yellow and brown Solodic soils occur in some drainage lines, with shallow red podzolic soils sometimes found on crests and upper slopes. Red earths also occur on higher crests. Local relief varies from 20-60 metres with gradients between 2-8%. All soils in this soil

landscape group are described as having a moderate erosion potential. Moderate salinity hazard.

Soil erosion is a serious environmental issue throughout the LGA. The SoE identifies that erosion has occurred across the Yass Valley as a result of clearing for agriculture, poor land management practices, overstocking and flooding events.

Contaminated lands:

A search of the contaminated land record, managed by the NSW DECC (DECC 2009a) identified one site within the Yass Valley LGA and one site within the Harden LGA of known contamination. The first site is a service station located within the township of Yass and the second site is a railway site within the township of Harden. There are no records on the public register of known contamination within or nearby any of the Coppabella wind farm site. It is understood that land use history within the precincts is a mixture of farming (grazing). Farming operations have the potential to contaminate land through activities such as sheep and cattle dips and diesel refuelling. Due to the historical land use of the precincts (farming) and the close involvement of the landowners in the development of the sites, the potential for contamination to be present and disturbed by construction activities is considered to be low.

Vegetation characteristics:

Typical of the region, the site carries Yellow Box (*Eucalyptus melliodora*), Red Box (*Eucalyptus polyanthemos*) and Blakely's Red Gum (*Eucalyptus blakelyi*), with areas of white box (*Eucalyptus albens*) occupying lower areas. Red Stringybark (*Eucalyptus macrorhyncha*), Broad-leaved Peppermint (*Eucalyptus dives*) and White Gum (*Eucalyptus rossii*) associations dominate hills.

Box-Gum Woodlands and natural temperate grasslands have been heavily cleared and fragmented by agricultural activities, and are listed as Endangered Ecological Communities. Of the remnant vegetation that remains in the Southern Tablelands region (Fallding 2002), 1% is grassland, 3% is grassland-woodland mosaic, 9% is Box-Gum Woodland, 21% is dry forest, 12 % is wet forest and 0.5% is riparian forest. Box-Gum Woodlands occupied around 23% of the region prior to European settlement. 9% of the region currently carries this community, in varying condition.

While retaining areas of wooded remnants, the subject site is heavily cleared. Woodland remnants contain depauperate or exotic understorey, with many affected by sheep camps. There are some highly restricted and fragmented examples of woodland understorey without tree cover in paddocks and saddles within the study area. There are also fragmented patches of remnant and regrowth woodland with tree cover and relatively intact understorey.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The district forms part of the core breeding area for the threatened Superb Parrot. The Superb

Parrot is known to nest locally in open Box-Gum Woodland or isolated paddock trees and has been recorded onsite. It is rarely found on ridges, moving through the lower landscape preferentially (NGH Environmental 2014,2016 – Appendix B.5 and B.6 of the attached Technical Report: 18 EPBC TR B5 and 19 EPBC TR B6).

The district forms part of the core foraging area for the threatened Eastern Bent?wing Bat. A known maternity cave for the Eastern Bent wing Bats is located c.45km (straight line distance) from the proposed Coppabella Hills wind farm site, near Wee Jasper. Extensive survey has identified the action would not be located within foraging range of the Wee Jasper maternity cave (NGH Environmental 2009).

The district is the centre of distribution for the threatened Yass Daisy. None are located in the project footprint.

3.5 Describe the status of native vegetation relevant to the project area.

Three broad groupings of Box-Gum Woodland and derived native pasture Southern Region vegetation types defined by Thomas, Gellie and Harrison (2000) and Gellie (2005) most closely correspond to the remnant vegetation present in the study area. These include: Box Gum Woodland, Long-leaved Box-Red Stringybark Dry Shrub/Grass Forest and Riparian River Red Gum Forest and are discussed below.

Box-Gum Woodland and derived native pasture;

Vegetation was conservatively assigned to Box-Gum Woodland if Yellow Box (*Eucalyptus melliodora*), White Box (*E. albens*) or Blakely's Red Gum (*E. blakelyi*) was present, even as a minority component. Box-Gum Woodland with additional tree species Red Box (*E. polyanthemos* ssp *polyanthemos*), Red Stringybark (*E. macrorhyncha*) or Long-leaved Box (*E. goniocalyx*) is present in many parts of the Coppabella Hills Precinct, in varying condition.

Unlike many tableland areas where this community is restricted to lower slopes and valley floors and is replaced by a different assemblage (usually including *E. dives* and *E. mannifera*) on more exposed ridge tops, this Box-Gum Woodland community also occurs on ridge tops in parts of the site. This is possibly as a result of the volcanic geology of the area, which has given rise to relatively deep and fertile soils on the ridge tops. The Box-Gum Woodland community on the site is located on fertile soils, and therefore coincides with prime farmland. It has been heavily impacted by clearing, grazing, cultivation and the introduction of weed and pasture species.

Parts of the subject site have lost nearly all evidence of the natural woodland, including most of the ridge crests and much of the intervening valley floors. Relatively intact Box-Gum Woodland remnants are present in a few small areas in saddles. Ridgetop woodland remnants generally consist of regrowth eucalypts of Yellow Box, White Box or Blakely's Red Gum with low species diversity groundcover. Occasional smaller trees, Kurrajong (*Brachychiton populneus*) or Hickory Wattle (*Acacia implexa*), are also a feature of this community. On some cleared ridges only Kurrajongs remain, while Hickory Wattle is most often present as dead trees. Scattered trees in pasture are frequently in poor condition, with dieback-affected crowns. Shrubs are extremely

rare and are generally restricted to only two species: *Hibbertia obtusifolia* and *Melichrus urceolatus*.

The condition of the groundcover of Box-Gum Woodland remnants on the site is extremely variable across the site and appears to coincide with the intensity of grazing. The condition ranges from good in areas with little or no grazing pressure and a range of native forb and grass species present in the understorey to poor on crests where exotic species are. Poor quality Box-Gum Woodland remnants may or may not include a tree stratum and are most often located at the highest points of the landscape where sheep camp. Many poor quality areas carry thistles (**Onopordum acanthium*, **Carthamus lanatus*), Paterson's Curse (**Echium plantagineum*) and European nettle (**Urtica urens*) as the dominant species. In some areas exotic pasture species such as Barley Grass (**Hordeum leporinum*) and Perennial Rye Grass (**Lolium perenne*) and legumes (**Trifolium* spp) may also be abundant, but more often it is exotic forbs which form the bulk of the cover.

Many Box-Gum Woodland remnants along the ridges, saddles and upper slopes on the site are in poor-moderate to moderate condition. These areas generally have few overstorey trees although carry a higher proportion of native grass and forb species, such as grasses *Austrodanthonia* spp., *Austrostipa scabra* ssp *falcata*, *Aristida ramosa*, *Bothriochloa macra*, and *Microlaena stipoides*, with forbs *Rumex brownii, Solenogyne dominii*, *Hypoxis vaginatus, Drosera peltata* and *Wurmbea* spp. In and near some remnant woodland patches forbs such as *Dichondra repens, Hydrocotyle laxiflora* and *Oxalis perennans* persist in small numbers, but often only beneath logs and rock outcrops where grazing pressure is slightly reduced. Parts of the site with a predominately native understorey have recovery potential if grazing pressure were reduced. Some areas, generally in saddles where native groundcover species tend to dominate, may be capable of producing some tree regeneration and improved native groundcover diversity. Other areas, mostly those on the highest points where turbines would be located, appear to be most heavily impacted by sheep and are unlikely to be capable of recovery as the remaining trees are too stressed to produce seed, and if grazing pressure were reduced exotic groundcovers would simply become more dominant.

There are several closely related Box-Gum Woodland vegetation types described by Thomas *et al.* (2000) and Gellie (2005) which include all or two of White Box, Yellow Box and Blakely's Red Gum. Relevant communities are Forest Ecosystem 116 (*E. macrorhyncha-E. blakelyi*, with occasional *E. melliodora* or *E. goniocalyx*), FE117 (*E. albens-E. blakelyi*), FE120 (*E. macrorhyncha-E. albens* with occasional *E. blakelyi* and *E. polyanthemos*), FE160 (*E. blakelyi-E. melliodora*), FE161 (*E. melliodora*) and FE163 (*E. blakelyi-E. polyanthemos*). All these communities are said to have few or no shrubs and a grassy understorey of very similar species composition, and most of the indicator species mentioned by Gellie (2005) for any of these communities occur on or near the Coppabella Hills Precinct.

The SCRA classification is likely to be based on samples from highly disturbed remnants, and any variation in species composition may reflect past management rather than any inherent community differences. Given these identification difficulties, and since all the types have similar conservation status, they have not been distinguished in this assessment.

Lowland woodland and exotic pasture:

The original vegetation occupying the lowlands surrounding the clusters, and over much of the proposed transmission route, is likely to have been Box-Gum Woodland dominated by Yellow Box and Blakely's Red Gum. Modified Box-Gum Woodland remnants are present alongside Whitefields and Illalong Roads. The road verge clusters have a depauperate groundcover, but frequently include large mature trees. In many arable lowland paddocks, soils have been cultivated and fertilised and the understorey has been replaced with exotic pasture, fodder and weed species. Mixed pasture is also present in valley floors in mosaic with less modified native pasture.

Long-leaved Box – Red Stringybark dry grass forest:

Long-leaved Box (*E. goniocalyx*) tends to dominate patches of remnant forest or woodland on relatively steep slopes often on sheltered aspects. Long-leaved Box also occurs with Red Stringybark (*E.macrorhyncha*) on upper slopes and occasionally ridges as small copses or scattered trees over native pasture. Occasional small trees in this community include Kurrajong, and much less commonly Hickory Wattle, Native Cherry (*Exocarpos cupressiformis*) and Drooping Sheoak (*Allocasuarina verticillata*).

In all stands understorey vegetation has been modified, with the general elimination of the shrub stratum, except for a very occasional plant of *Hibbertia obtusifolia, Dodonaea viscosa* or *Melichrus urceolatus*.

The groundcover varies from largely native on steep midslopes to mostly exotic in small remnants on more heavily grazed ridgetop sites (**Lolium perenne, *Hordeum leporinum, *Urtica urens, *Erodium* spp and thistle spp). Native understorey species at less disturbed sites include grasses *Microlaena stipoides, Elymus scaber, Austrodanthonia* spp., and numerous native forbs including *Geranium solanderi, Poranthera microphylla, Cymbonotus* sp.*, Hydrocotyle laxiflora, Wahlenbergia stricta* and many other species, along with annual weeds **Briza maxima* and **Stellaria media*.

This community corresponds most closely to Forest Ecosystem 118: Western Slopes Dry Grass Forest in the Southern Region CRA classification, though a number of very similar communities are described (FE119, Western Tablelands Dry Shrub/Grass Forest, FE121, Northern Tablelands and Slopes Dry Shrub/Grass Forest and FE122, Northern Tablelands and Slopes Dry Shrub/Grass Forest, all of which include several indicator species found on Coppabella Hills Precinct). Key diagnostic species for FE118 present at Coppabella include the trees *Eucalyptus goniocalyx, E. macrorhyncha* and occasionally *E. blakelyi* or *Allocasuarina verticillata*, the shrub *Hibbertia obtusifolia,* the forbs *Gonocarpus tetragynus, Wurmbea dioica, Senecio tenuiflorus* and *Hydrocotyle laxiflora* and the grasses *Microlaena stipoides, Elymus scaber* and *Austrodanthonia* spp.

The difference between Long-leaved Box woodland and Box-Gum Woodland is not well defined in the field, since many stands are of mixed tree species composition. Long-leaved Box Woodland intergrades, and shares many understorey and canopy species, with a number of Box-Gum Woodland vegetation types. Examples of FE188 which have a grassy understorey and a representation of *E. melliodora, E. blakelyi* or *E. albens* may be included in the Box-Gum Woodland EEC/CEEC listed under the TSC Act and the EPBC Act. The understorey

composition can be very similar between the two communities, particularly for stands with similar levels of grazing intensity. Management may have caused initially different understoreys to converge over time due to the elimination of shrubs and more palatable native grasses and forbs. It is not clearly apparent on this site that Long-leaved Box Woodland is a different community from Box-Gum Woodland, although its prominence on sheltered slopes suggests that the two communities may have formerly partitioned the landscape between them based on aspect. Clearing and grazing has since blurred the distinction between them.

Modified riparian habitats: Western Slopes Riparian Moist Sedge Forest/Woodland:

A riparian community dominated by River Red Gum (*E. camaldulensis*) with occasional Apple Box (*E. bridgesiana*) is present along Jugiong Creek. Because of its inherent fertility, and due to impacts arising from clearing, grazing, erosion, sedimentation, and disruption to flow regimes, the riparian habitat has been extensively colonised by exotic pasture grasses and weeds. This community falls within a single SCRA Forest Ecosystem: FE43 Western Slopes Riparian Moist Sedge Forest/Woodland. The single sample of this community seen at Jugiong Creek consisted of very sparse mature River Red Gums, a scatter of young saplings in the creek bed as a result of recent fencing of the riparian zone, a few browsed specimens of bottlebrush *Callistemon sieberi* and an entirely exotic groundcover. Similar vegetation was seen in a less disturbed situation in Travelling Stock Reserve No. 38 on Illalong Road south of the Coppabella Hills Precinct and detected at various points along Illalong Road where the creek closely approaches the road.

Native pasture:

Treeless pasture dominated by native grasses occurs on upper side slopes and in saddles in mosaic with more highly modified areas dominated by weeds. The dominant native grass species in pasture areas were *Austrodanthonia* spp, *Aristida ramosa, Bothriochloa macra, Microlaena stipoides, Austrostipa scabra* ssp *falcata,* and occasional *Panicum effusum* at the time of the survey. The diversity and abundance of native grass and forb species is highly variable between sites and within small areas, and is likely to change over time depending on season, water availability and grazing pressure.

To account for this spatial and temporal variability, native pasture areas and exotic pasture areas have been mapped as a single vegetation type. On most surveyed pasture areas, exotic grasses and forbs were found to dominate native groundcover species. Native pasture tends to occur predominately within saddles and more sheltered areas. The most commonly encountered native forbs are *Wurmbea dioica, W. latifolia, Hypoxis vaginata, Oxalis perennans, Cymbonotus* sp., *Crassula sieberiana, Solenogyne dominii* and *Drosera peltata*, with occasional *Geranium solanderi, Acaena echinata, Dichondra repens* and *Einadia nutans*. Among sheltered crevices created by rocks are ferns are *Cheilanthes* spp, and very rarely, *Asplenium flabellifolium* or *Pleurosorus rutifolius*. Such native pasture is likely to be derived from Box-Gum Woodland, which is the most widespread community in the area.

The composition of native pasture sites reflect a long grazing history and is usually low in native species diversity so that although the bulk of the vegetative cover may be composed of native grasses, the majority of the species present are exotic.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The landscape within the Coppabella Hills Precinct is undulating to hilly terrain with broken ridgelines.

The proposed turbine locations are spread out over one main ridgeline, that runs from north west to south west, and surrounding hills. The gradient varies significantly along the ridgeline and surrounding hills. The highest point is approximately 780m at proposed turbine 2. The lowest point is approximately 446m and lies between proposed turbine 69 and 72.

3.7 Describe the current condition of the environment relevant to the project area.

Forests and woodlands in the study area have been progressively ring-barked and felled over the past two centuries to provide pasture. Clearing and agriculture has produced a range of direct and indirect impacts to flora habitats, including altered microclimate, loss of pollinator and dispersal fauna, erosion of soils, particularly wind erosion from exposed ridge tops, elevated soil nutrients and rising saline groundwater. Agricultural activities have also resulted in the colonisation of a range of introduced plant species, with greatest displacement of natives occurring in moister, more fertile valley floor areas, areas subjected to pasture improvement and cultivation and areas selectively targeted by sheep for grazing and camping (the latter usually on ridges and peaks). In many areas, grazing is likely to have reduced or eliminated selectively grazed or grazing sensitive species, such as Kangaroo Grass (*Themeda australis*), terrestrial orchids, native legumes, wattles and other shrubs. The subject site carries a high proportion of exotic weed and pasture species, ranging from less than one quarter of total herbaceous cover on less disturbed steep side slopes to total displacement of native species on many of the most exposed treeless ridges. The major exotic species are grasses (**Lolium perenne, *Hordeum leporinum*), clovers (**Trifolium* spp), asteraceous weeds (Capeweed, **Arctotheca calendula* and thistles, **Onopordum, *Carthamus* and **Cirsium* spp), Storksbill (**Erodium* spp) and Paterson's Curse (**Echium plantagineum*). In less disturbed areas with a tree canopy the most common exotic species at the time of the survey were annuals, Chickweed (**Stellaria media*) and Quaking Grass (**Briza maxima*). These areas would probably appear less weedy later in the season, when these species have seeded and disappeared. Six weeds listed as noxious in the Southern Slopes County Council area 7 control area under the *Noxious Weeds Act 1993* were recorded at the subject site. Locations where these weeds were recorded are provided in Table 5-3 below. The six noxious weed species are listed as Class 4 weeds for the Southern Slopes County Council control area. The control objective for Class 4 weeds is to minimise the negative impact of those plants on the economy, community or environment of New South Wales. They are required to be controlled in accordance with a local management plan published by the local control area authority.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

The Yass Post Office was the only Commonwealth Heritage place listed under the EPBC Protected Matters Report conducted on the 2 November 2017. This Commonwealth Heritage place is approximately 40km from the proposed wind farm site, within the township of Yass and is not relevant to the project area.

3.9 Describe any Indigenous heritage values relevant to the project area.

Assessment of the original Yass Valley Wind Farm documented that, in the region a general correlation between different types of watercourses and the nature of the evidence of past Aboriginal occupation is evident. Higher artefact density sites are located near to permanent water sources and low density artefact distributions are found elsewhere. Rare site types include rock shelters, scarred trees, quarry and procurement sites, burials, stone arrangements, carved trees, contact sites and traditional story or other ceremonial places (NGH 2009).

Archaeological and heritage assessments carried out by NSW Archaeology Pty Ltd (Dibden 2009) identified 70 Aboriginal heritage sites within the Coppabella precinct and the assessment concluded that artefact density is generally very low.

The majority of the Aboriginal object locales recorded (45) were very low or low density distributions of stone artefacts. The archaeological significance of these was assessed to be low. Accordingly, a management strategy of unmitigated impact was considered to be appropriate.

A number of the Aboriginal object locales and/or discrete areas within Survey Units were assessed to be of low/moderate (4) or moderate (21) archaeological significance. Accordingly, in regard to these it was generally recommended that limiting the extent of impacts to these locales, if at all feasible, should be given consideration. In regard to these locales it was recommended that a salvage program of subsurface excavation be undertaken as a form of Impact Mitigation.

In 2016, NSW Archaeology Pty Ltd conducted an Aboriginal heritage (archaeological and cultural) assessment in relation to the proposed new Coppabella Wind Farm. A revised report was prepared (attached in full).

During the two additional periods of field survey an additional 12 Aboriginal object locales were recorded. A total of 82 Aboriginal object locales have been recorded by Dibden (2017a) across the Coppabella precinct. All 12 Aboriginal object locales identified in the 2016 and 2017 surveys are within areas that would be directly impacted by the proposed project modification. Of the 12 newly recorded Aboriginal object locales, six were assessed as having low local scientific significance and the other six were assessed as having potentially moderate scientific significance (Dibden 2017a).

As a result of the project, a total 48 Aboriginal object locales, inclusive of 36 original (from the Yass Valley Wind Farm footprint) and 12 new sites, would now be impacted. This is 34 fewer Aboriginal object locales that would be impacted, compared to the approved Yass Valley Wind Farm project.

Dibden (2017a) states that the results of the revised assessments are entirely comparable to that as previously surveyed (Dibden 2009). The modified project would entail ground disturbance similar in nature to that under the approved project. Accordingly, the construction of the project would have potential to cause impacts to any Aboriginal areas, places or objects which may be present within the zones of direct impact.

The revised ACHA report (attached) provides recommended management strategies relating to each of the Survey Units and Aboriginal object locales that Dibden has recorded in the Coppabella precinct to date. In summary:

The majority of Aboriginal object locales recorded across the Coppabella precinct are very low or low density distributions of stone artefacts, assessed to be of low significance. Accordingly, a management strategy of unmitigated impact is considered appropriate for those sites.

A number of the Aboriginal object locales and/or discrete areas within Survey Units are assessed to be of low/moderate or moderate archaeological significance. For these areas, it has been recommended:

To consider limiting the extent of impacts, if feasible.

Implement a salvage program of subsurface excavation as a form of mitigation.

Additionally, it is noted that a draft Heritage Management Plan (HMP) has been developed (Dibden, 2017b) to satisfy the requirements of Condition 25 of the Development Consent. The HMP document will provide a framework to ensure that the Development Consent conditions are complied with during the construction and operation of the wind farm.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

Freehold.

3.11 Describe any existing or any proposed uses relevant to the project area.

The proposed wind farm site is located in the Yass Valley and Hilltops Local Government Areas on land zoned for rural uses. Agriculture is a dominant industry in the region, particularly sheep and cattle grazing. A strong transmission network passes through both precincts and connects into the Yass substation, one of the strongest nodes in the transmission network outside of Sydney.

Mineral exploration:

A search was conducted of the NSW Government Planning and Environment MinView website on the 16 November 2017 for all mineral exploration licences. A SHP file was uploaded into the MinView map and the mineral exploration licences layer was added. The search returned no

results, therefore there are no current exploration license within the proposed wind farm site. The NSW DPI suggest that while the construction of the wind farm may not physically prevent exploration from being undertaken within the area, it could be a disincentive to explorations if it restricts or precludes the mining of any resources that may be discovered.

There are no operating mines within the development envelope.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The mitigation measures accompanying the project are derived from:

1 EPBC 2013/7002 Yass Valley Wind Farm approval.

2 NSW planning approval (Development Consent SSD 6698).

3 Statements of Commitment made by the proponent; required under the EP&A Act Part 3A,setting out how the proponent proposes to manage the project to minimise, and where possible avoid, impacts.

4 The commitments made in the current modified project (project as described in this referral and consistent with that currently being assessed by the NSW).

Items 1-3 are provided in full in Appendix F of the attached Technical Report (26 EPBC TR F) which also investigates their currency to the new project being referred.

The mitigation strategies for the approved project (EPBC 2013/7002) focused on minimising impacts and offsetting residual impacts. The conditions of EPBC approval 2013/7002 for the project include:

Preparation of a Biodiversity Management Plan to minimise impact on BGW during construction and birds and bats during operation.

Investigation of site usage by Superb Parrot (flight paths).

Offset Strategy for BGW, Superb Parrot, Golden Sun Moth (now determined not to occur at the site and not proposed to be offset), Regent Honeyeater and Swift Parrot (impacts no longer considered significant and not proposed to be offset).

Additionally, the following mitigation measures are now proposed (refer to Section 7.1.2 of Technical Report for justification: 5 EPBC TR) during both the construction and operational

phases of the project:

Koala Warning signage along Whitefields Road adjacent to the area of Koala habitat with score less than or equal to 7 in the Coppabella Wind Farm site to alert drivers to the potential hazard.

A maximum speed limit of 40 km/hr on internal tracks within the Coppabella Wind Farm project area.

Inclusion of pathogen hygiene protocols in the Biodiversity Management Plan for the project.

This process of minimising the impacts of the project is built into the design, construction and operational stages of the project. Minimisation of impacts during detailed design and construction is a key requirement of the existing Commonwealth and NSW conditions. A process has been completed as part of the early design and assessment of the project whereby minimisation of impacts on higher conservation value areas has informed the construction footprint. The table and map set included in Appendix E of the attached Technical Report shows areas where minimisation of biodiversity impacts has been considered during the detailed design process (25 EPBC TR E). This includes four issues relevant to MNES.

Construction and operational impact management strategies are being developed to minimise impacts and offset all residual impacts, to be formalised in construction and operational managment plans for the project.

Offsets are proposed in accordance with the NSW Framework for Biodiversity Assessment, as set out in Section 7.3 of the Technical Report. This is the NSW offset tool for major projects and it has been endorsed by the Commonwealth government. It meets the NSW endorsed offsets policy in that it:

- Uses the prescribed ‘linear’ assessment method in the FBA to assess the landscape values of the project. This is done accurately using GIS analysis of the footprint buffered by 550m (as required by the methodology).

- Uses standardised field data, collected in accordance with the FBA. The methods and quantity of data satisfy the minimum requirements of the FBA (This is with the exception of two Long-leaved Box Dry Grass Forest plots which were collected in November 2017 and will be used to update the credit calculations. This has no impact on MNES). The input include ‘plot’ data from quadrats as well as properly timed targeted species surveys.

- Uses the approved online calculator to calculate the ‘ecosystem’ and ‘species’ credits required for the project.

- Commits to offset the credit requirement, in accordance with the FBA rules and methodology.

It is proposed that the offsets will:

- Account for the final impact area of the development.

- Be managed for biodiversity improvement in perpetuity.

- Be compliant with OEH endorsed offset guidelines and methodologies.

-Additionally, account for impacts to Hollow bearing trees (HBTs).

-Incorporate input from OEH, Local Land Services, Commonwealth DoE and Council, as appropriate.

The preferred method for securing offset sites required for the Coppabella Wind Farm is that credits representative of the physical offsets would be secured and banked under the Biobanking scheme. If CWFPL is unable to secure sufficient credits for physical offsets, alternate allowable options in NSW would be undertaken, however it is considered highly feasible that all Commonwealth offsets (being a smaller subset of the overall offset package) will be able to be physically secured ‘like for like’ within the project site boundaries. This is a commitment of the project and is discussed further below. More than seven times the NSW Box Gum Woodland offset requirement is available within the project boundaries.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

The outcomes proposed for Box Gum Woodland CEEC are to minimise the impacts as much as practical and to offset all residual impacts. Existing commitments include weed hygiene and sediment erosion controls aimed at minimising indirect impacts.

The outcomes proposed for Superb Parrot are to minimise the impacts as much as practical (avoiding hollow bearing trees as far as possible) and to offset all residual impacts, including supplementary hollow bearing tree offsets. As above, existing commitments include weed hygiene and sediment erosion controls aimed at minimising indirect impacts. Refer to Appendix F of attached Technical Report (attachment as 26 EPBC TR F).

Australian Government
Department of the Environment and Energy

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

-

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

The Coppabella Wind Farm is being developed by Goldwind and its associated body corporate; Coppabella Wind Farm Pty Ltd (CWFPL). As such, this section has been prepared based on the environmental performance of Goldwind.

Founded in Urumqi, China in 1998, Goldwind is one of the world's leading wind power companies. Goldwind provides products and services that support the global transition toward clean power. Goldwind views manufacturing wind turbine generators as its foundation, customer service as its guiding principal, and technological innovation as its path forward and potential to add value along the renewable energy industry value chain.

Established in 2009, Goldwind's local Australian team offers comprehensive wind power solutions, including investment, construction, and operational and maintenance services. Goldwind's first Australian project, Morton's Lane Wind Farm, has been operational since 2012. Goldwind Australia has a successful track record in developing wind farms including the Mortons Lane Wind Farm (operational since 2012), Gullen Range Wind Farm (operational since 2014) and Gullen Range Solar Farm operational from 2017, and White Rock Wind Farm and White Rock Solar Farm (both currently under construction). All of these projects contribute to meeting Australia's Renewable Energy Target.

Goldwind undertakes its activities in accordance with its certified management system including certification against ISO 14001:2015. Each of its renewable energy projects have specific environmental management plans relevant to construction and operations.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

Goldwind has no past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

Goldwind is committed to work health and safety, minimising environmental impact and eliminating pollution, and the supply and maintenance of quality products and services. Goldwind has developed an Environmental and Quality Management System designed to provide a comprehensive framework to address relevant requirements and to ensure that all relevant personnel assist Goldwind in meeting its environmental and other commitments.

The Goldwind Australia Management System incorporates Health, Safety, Environment and other functions through a documented set of plans, actions and procedures to manage risk in an appropriate way. Goldwind Australia has been independently externally accredited by DAkkS for the following standards:

AS/NZS ISO 14001:2015 Environmental Management System

AS/NZS 9001:2015 Quality Management System

OHSAS 18001:2007 Occupational Health and Safety Management System

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

Goldwind has acquired projects for which Commonwealth approvals had already been obtained by other parties. They have been responsible for undertaking the following actions under the EPBC Act:

Yass Valley Wind Farm, Yass NSW EPBC 2013/7002

Cattle Hill Wind Farm, Tasmania EPBC 2009/4839

Stockyard Hill Wind Farm, Beaufort-Skipton EPBC 2016/7746

Moorabool Wind Farm, Ballan Victoria EPBC 2009/4907

Additionally, Goldwind has sought a decision from the Department of Environment and Energy on:

White Rock Solar Farm, Glen Innes NSW EPBC 2017/7898 – not a controlled action.

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
The following documents are attached to this referral, listed by file name, scope and citation.	-.	-
1 Aboriginal heritage assessment 2017. This is the assessment that accompanied the NSW Modification Application. Dibden, J (2017a) Revised Yass Valley Wind Farm – The Coppabella Hills Aboriginal Cultural Heritage Assessment Report, Draft 3.	High.	Survey and consultation guidelines followed. Remaining uncertainty is acceptable.
2 Commonwealth approval This is the approval for the Yass Valley Wind farm: EPBC 2013/7002.	High	NA
3 NSW approval This is the approval for the Yass Valley Wind farm: NSW Development Consent SSD 6698	High	NA
4 GIS zip folder MNES This is the zip file of all shp files relevant to this referral	Moderate - High	Based on extensive field work and civil design layouts. Uncertainty will always be present in defining vegetation boundaries and preliminary earthworks design.
5 EPBC Technical Report Coppabella Wind Farm (here after referred to as EPBC TR) Report prepared to support this EPBC referral. It summarises and appends all relevant assessments. See Appendices A to F designated by EPBC TR	High – based on 10 years worth of survey data for the site.	Precautionary assumptions made regarding potential habitat and analysis of collision risk, based on literature and other wind farms

Reference Source	Reliability	Uncertainties
'A-F' below . NGH Environmental 2017c. EPBC Technical Report Coppabella Wind Farm. Report prepared for Goldwind, December 2017.		
6 EPBC TR A1 Appendix A1 of the EPBC Technical Report Coppabella Wind Farm. Modified construction footprint versus approved infrastructure, NGH Environmental (2017b).	Moderate - High	Based on civil design layouts. Uncertainty will always be present in preliminary earthworks design.
7 EPBC TR A2 Appendix A2 of the EPBC Technical Report Coppabella Wind Farm. Modified construction footprint versus approved infrastructure showing detailed vegetation mapping, NGH Environmental (2017b).	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining vegetation boundaries. Precautionary assumptions have been applied.
8 EPBC TR A3 Appendix A3 of the EPBC Technical Report Coppabella Wind Farm. Involved landowner map (host property boundaries), NGH Environmental (2017b).	High	None
9 EPBC TR A4 Appendix A4 of the EPBC Technical Report Coppabella Wind Farm. CEEC at Coppabella Wind Farm, created for this assessment.	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining vegetation boundaries. Precautionary assumptions have been applied.
10 EPBC TR A5 Appendix A5 of the EPBC Technical Report Coppabella Wind Farm. Superb Parrot habitat, created for this assessment.	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining ecological boundaries. Precautionary assumptions have been applied.
11 EPBC TR A6 Appendix A6 of the EPBC Technical Report Coppabella Wind Farm. Swift Parrot and Regent Honeyeater habitat, created for this assessment.	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining ecological boundaries. Precautionary assumptions have been applied.
12 EPBC TR A7 Appendix A7 of the EPBC Technical Report Coppabella Wind Farm. Koala	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining ecological

Reference Source	Reliability	Uncertainties
habitat, created for this assessment		boundaries. Precautionary assumptions have been applied.
13 EPBC TR A8 Appendix A8 of the EPBC Technical Report Coppabella Wind Farm. Areas being investigated for offsets, NGH Environmental (2017b).	Moderate - High	Based on extensive field work. Uncertainty will always be present in defining ecological boundaries. Precautionary assumptions have been applied.
14 EPBC TR B1 Appendix B1 of the EPBC Technical Report Coppabella Wind Farm. Biodiversity Assessment: Coppabella Hills Precinct, NGH Environmental (2009a), including species list from original survey work.	Moderate.	Now dated but has been updated in the above assessments with targeted surveys and new data base searches to address this.
15 EPBC TR B2 Appendix B2 of the EPBC Technical Report Coppabella Wind Farm. NSW Modification Application Ecology chapters 8-10, NGH Environmental (2017b; project description coincides with this referral).	High.	Precautionary assumptions made regarding potential habitat and analysis of collision risk, based on literature and other wind farms
16 EPBC TR B3 Appendix B3 of the EPBC Technical Report Coppabella Wind Farm. Yass Valley Wind Farm – Golden Sun Moth and Striped Legless Lizard 2014/2015 Summer Survey Results. NGH Environmental (2015b).	High.	The species is easily observed during the correct survey window. A reference population was available.
17 EPBC TR B4 Appendix B4 of the EPBC Technical Report Coppabella Wind Farm. Golden Sun Moth survey effort and results 2015. Extracted from NGH Environmental (2015c).	High.	The species is easily observed during the correct survey window. A reference population was available.
18 EPBC TR B5 Appendix B5 of the EPBC Technical Report Coppabella Wind Farm. 2014 Superb Parrot Flight Path Mapping surveys, NGH Environmental (2015a).	High.	The species is easily observed during the correct survey window. A reference population was available.
19 EPBC TR B6 Appendix B6	High.	The species is easily observed

Reference Source	Reliability	Uncertainties
of the EPBC Technical Report Coppabella Wind Farm. 2016 Superb Parrot Flight Path Mapping surveys, NGH Environmental (2017a).		during the correct survey window. A reference population was available.
20 EPBC TR B7 Appendix B7 of the EPBC Technical Report Coppabella Wind Farm. Wind Farm Risks to Birds and Microbats (Appendix G of the Environmental Assessment. Proposed Yass Valley Wind Farm: Coppabella Hills and Marilba Hills Precincts. Report prepared by NGH Environmental for Epuron. NGH Environmental (2009b)	Moderate.	Now dated but has been updated in the assessment below, to consider new data from other wind farms.
21 EPBC TR B8 Appendix B8 of the EPBC Technical Report Coppabella Wind Farm. Coppabella Wind Farm – proposed turbine modification impacts on birds and bats, BL&A (2017).	High – based on 10 years worth of survey data for the site.	Precautionary assumptions made regarding collision risk, based on literature and other wind farms
22 EPBC TR B9 Appendix B9 of the EPBC Technical Report Coppabella Wind Farm. Coppabella Wind Farm – Targeted flora surveys 2017. NGH Environmental (2017c)	High	Target species easily observed during the correct survey window.
23 EPBC TR C Appendix C of the EPBC Technical Report Coppabella Wind Farm. Protected matters data base search 2017	NA	NA
24 EPBC TR D Appendix D of the EPBC Technical Report Coppabella Wind Farm. Flora list for Box Gum Woodland Critically Endangered Community Survey Sites	Moderate to High	Experienced botanists employed to collate species lists.
25 EPBC TR E Appendix E of the EPBC Technical Report Coppabella Wind Farm. Minimisation measures undertaken during design,	NA	NA

Reference Source	Reliability	Uncertainties
informed by ecological advice.		
26 EPBC TR F Appendix F of the EPBC Technical Report Coppabella Wind Farm. All mitigation measures relevant to the project.	NA	NA

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

No alternatives are proposed.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Development Compliance Manager

9.2.2 First Name

Jeff

9.2.3 Last Name

Bembrick

9.2.4 E-mail

jeffbembrick@goldwindaustralia.com

9.2.5 Postal Address

Suite 2, Level 23

201 Elizabeth Street
Sydney NSW 2000
Australia

9.2.6 ABN/ACN

ACN

141003161 - COPPABELLA WIND FARM PTY LTD

9.2.7 Organisation Telephone

Australian Government
Department of the Environment and Energy

(02) 9008 1715

9.2.8 Organisation E-mail

info@goldwindaustralia.com

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, JEFF BEMBRICK, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:..... Date: 21/12/17

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: .....

Australian Government
Department of the Environment and Energy

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Development Compliance Manager

9.5.2 First Name

Jeff

9.5.3 Last Name

Bembrick

9.5.4 E-mail

jeffbembrick@goldwindaustralia.com

9.5.5 Postal Address

Suite 2, Level 23

201 Elizabeth Street
Sydney NSW 2000
Australia

9.5.6 ABN/ACN

ACN

141003161 - COPPABELLA WIND FARM PTY LTD

9.5.7 Organisation Telephone

(02) 9008 1715

9.5.8 Organisation E-mail

info@goldwindaustralia.com

Proposed designated proponent - Declaration

Australian Government
Department of the Environment and Energy

I, JEFF BEMBRICK, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date: 21/12/17

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Project Manager

9.8.2 First Name

Brooke

9.8.3 Last Name

Marshall

9.8.4 E-mail

brooke.m@nghenvironmental.com.au

9.8.5 Postal Address

Suite 1

216 Carp Street
Bega NSW 2550
Australia

9.8.6 ABN/ACN

ABN

38711349561 - The Trustee For THE NICHOLAS GRAHAM-HIGGS DISCRETIONERY TRUST

9.8.7 Organisation Telephone

02 64928333

Australian Government
Department of the Environment and Energy

9.8.8 Organisation E-mail

brooke.m@nghenvironmental.com.au

Referring Party - Declaration

I, BROOKE MARSHALL, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: Marshall Date: 21/12/2017

Australian Government
Department of the Environment and Energy

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 1_aboriginal_heritage_assessment_2017.pdf
2. 2_commonwealth_approval.pdf
3. 3_nsw_approval.pdf
4. 4_gis_zip_folder_mnes.zip
5. 5_epbc_tr.pdf
6. 6_epbc_tr_a1.pdf
7. 7_epbc_tr_a2.pdf
8. 8_epbc_tr_a3.pdf
9. 9_epbc_tr_a4.pdf
10. 10_epbc_tr_a5.pdf
11. 11_epbc_tr_a6.pdf
12. 12_epbc_tr_a7.pdf
13. 13_epbc_tr_a8.pdf
14. 14_epbc_tr_b1.pdf
15. 15_epbc_tr_b2.pdf
16. 16_epbc_tr_b3.pdf
17. 17_epbc_tr_b4.pdf
18. 18_epbc_tr_b5.pdf
19. 19_epbc_tr_b6.pdf
20. 20_epbc_tr_b7.pdf
21. 21_epbc_tr_b8.pdf
22. 22_epbc_tr_b9.pdf
23. 23_epbc_tr_c.pdf
24. 24_epbc_tr_d.pdf
25. 25_epbc_tr_e.pdf
26. 26_epbc_tr_f.pdf