Appendix O: Rye Park wind farm Preliminary Documentation – Proposed Activities

The approved Rye Park Wind Farm (the Project) is located east of Rye Park, to the north-west of Yass and south-east of Boorowa, in New South Wales. Development Consent was granted, by the NSW Planning Assessment Commission (PAC, now known as the Independent Planning Commission (IPC)), on 22 May 2017, for the construction, operation and decommissioning of up to 92 wind turbines with a maximum tip height of 157 m and associated infrastructure.

In the years since the Development Consent was granted, there have been significant advances in wind turbine technology. Given this, a request to modify the Project Development Consent State Significant Development (SSD) 6693 (Development Consent) is currently being sort under section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed modifications to the Development Consent include:

- Removal of 15 wind turbines (to a total of 77 turbines)
- Increase to the wind turbine envelope (to a maximum tip height of 200 m)
- Revisions to the Development Corridor
- Selection of the Preferred Transport Route (from multiple options to a preferred option)
- Amendment of the table of operational noise criteria so it can be replaced with more general criteria that will be valid for any hub height; and
- Application of the new Biodiversity Assessment Method (BAM) definition of hollow-bearing trees so the original intent of the micro-siting condition can be fully exercised.

The Proposed Modifications are required to enable the Project to utilise improvements in wind energy technology to enable significantly more renewable energy production to be achieved with fewer, larger wind turbines and to reflect the outcomes of the ongoing design optimisation and assessment carried out as the Project progresses towards construction. The Project is expected to be operational for approximately 30 years.

A referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was made for the Project (EPBC 2014/7163) and the Project was determined to be a Controlled Action. The referral was made against the Original EIS Project layout that consisted of 126 wind turbines with a maximum tip height of 157 m. The Project was granted approval under the EPBC Act, subject to conditions, on 6 December 2017 (EPBC Approval).

Since the Project was first referred under the EPBC Act, the Project has progressed through several iterations including:

- *Original EIS* – 126 wind turbine project, with a 157 m tip height
- *Original RTS* – 109 wind turbine project, with a 157 m tip height
- *Approved Project* – 92 wind turbine project, with a 157 m tip height
- *Modified Project* – 80 wind turbine project, with a 200 m tip height
- *Final Modified Project* – 77 wind turbine project, with a 200 m tip height

Given the extent of changes from the Approved Project to the Modified Project, re-referral under the EPBC Act was required.

The Project is being proposed by Rye Park Renewable Energy Pty Ltd (RPRE) (the Proponent), a wholly owned subsidiary of Tilt Renewables Limited.

Consent Condition 20b of the existing state approval for the project (SSD 6693) stated that the Applicant must "*update the baseline mapping of the vegetation and key habitat within the final disturbance area*". The approved project involved vegetation and key habitat mapping which was completed at a regional scale. As a result of implementing this consent condition Umwelt were required to undertake substantial GIS mapping refinements, where vast areas mapped as 'woodland' were revised to comprise woodlands and derived native grasslands, similarly where vast areas mapped as 'derived native grasslands' were revised to also include remnant woodlands.

As a result of completing this extensive 'update' to baseline mapping and key habitat, in combination with a

substantially different project design, it is not possible to present a direct comparison of the extent of impacts to MNES considered in the original EPBC Act Referral and Preliminary Documentation (Epuron 2017) with that to the modified re-referral for the proposed modification. Instead, this re-referral aims to present, as far as possible, both the information and methodology previously presented and the information and methodology presented in the current modified project. Where a consistent assessment approach has been taken this has been presented, while where an assessment approach differs to the original assessment this has also been presented.

1.1.1 Proposed Activities

Key construction activities involve the installation of 77 wind turbines and associated infrastructure including a transmission line (33kV and up to 330kV), creation of internal access tracks, installation of underground cabling, collector substation, connection substation, operation and maintenance facilities, temporary construction compounds, laydown areas and concrete batch plants. Construction activities and key project components are described in further detail below and shown at Appendix A.

Wind Turbines and Turbine Parameters

The wind turbine envelope will have a maximum tip height of 200 m. A final wind turbine model has not yet been selected, with several wind turbine models to be considered as part of a commercial tender process. A maximum 200 m tip height is proposed to enable flexibility in the selection of the most appropriate and efficient model for the Project. The indicative turbine parameters that have been used for the environmental assessments that supported the Modification Application and how they differentiate to those of the Original EIS Project are shown in Table 1. Appendix B also shows the various project iterations and the reduction in the number of turbines.

As part of the Biodiversity Assessment Addendum, the proposed turbine footprint layout (and associated infrastructure) was reduced from 126 turbines to 109 turbines. The proposed project footprint assessed as part of the addendum totalled 256.8 hectares (NGH 2016). The proposed 109 turbine footprint was also assessed as part of the Preliminary Documentation (Epuron 2017).

Table 1 Turbine Parameters

Parameter	Original EIS Project	Final Modified Project	Extent of Change
Number of wind turbines	126	77	Decrease in 49 turbines
Maximum tip height	157 m	200 m	Increase in 43 m
Indicative rotor diameter	115 m	170 m	Increase in 55 m
Indicative minimum blade ground clearance	42 m	30 m	Decrease in 12 m
Indicative Rotor Swept Area (RSA) per wind turbine	10,386.89 m^2	22,698 m^2	Increase in 12,311.11 m
Indicative Total RSA for wind farm	1,308,748 m^2	1,747,746 m^2	Increase in 438,998 m^2

Development Corridor and Indicative Development Footprints

The original project approval considered a Site Perimeter within which all proposed project infrastructure was contained within a 200 metre wide corridor, or 'Project Corridor' (NGH 2014). This Project Corridor totalled approximately 4,850 hectares (NGH 2014). The total area of the wider Site Perimeter or 'Project Area' covered the extent of involved landholding lot boundaries and therefore totalled some 14,000 hectares. As part of the original Biodiversity Assessment, this considered a proposed 126 turbine footprint layout (and

associated infrastructure).

As part of the Biodiversity Assessment Addendum, the proposed turbine footprint layout (and associated infrastructure) was reduced from 126 turbines to 109 turbines. The proposed project footprint assessed as part of the addendum totalled 256.8 hectares (NGH 2016). The proposed 109 turbine footprint was also assessed as part of the Preliminary Documentation (Epuron 2017).

It is important to note however that neither the Biodiversity Assessment (NGH 2014), the Biodiversity Assessment Addendum (NGH 2016), EPBC Act Referral (Epuron 2013) or Preliminary Documentation (Epuron 2017) assessed the ecological impacts associated with the external transport route.

As part of the re-referral and project modification, a detailed project footprint has been subject to the ecological assessment. There are two Development Corridors, totalling approximately 1,327 hectares, being the Development Corridor – Wind Farm and Development Corridor – Permanent Met Masts. The Development Corridors include the extent of wind farm specific work in its entirety, as well as adjoining land, however it excludes the external roads.

The Indicative Development Footprints will be subject to a range of project disturbances. The total indicative impact zone (e.g. all ground disturbance) associated with the wind farm specific components of the Project, excluding the external road upgrades and permanent met masts, is termed Indicative Development Footprint – Wind Farm (approximately 489 hectares).

The total indicative impact zone associated with the external road upgrades is termed Indicative Development Footprint – External Roads (approximately 19 hectares). The total indicative impact zone associated with the permanent met masts is termed Indicative Development Footprint – Permanent Met Masts (approximately 9 hectares).

Table 2 provides a comparison of key Project infrastructure components from the Original EIS Project to the Final Modified Project.

Table 2 Key Project Infrastructure Components

Parameter	Original EIS Project	Final Modified Project	Extent of Change
Disturbance Areas			
Indicative Development Footprint – Wind Farm	291.4 ha	489 ha	Increase in 197.6 ha
Indicative Development Footprint – External Roads	-	18.66 ha	-
Indicative Development Footprint – Permanent Met Masts	-	9.17 ha	-
Internal tracks Impact area (Temporary)	88.9 ha	267.2 ha	Increase by 178.3 ha
Underground cabling area (Temporary)	8.9 ha	90.5 ha	81.6 ha
Transmission line Up to 300kV (Full easement) area	147.7 ha	28.21 ha	-
Transmission line (Up to 300kV) (track, poles and string pads) area	-	26.79 ha	-
Transmission line (Full easement) area	-	1.44 ha	-
Transmission line (track, poles and string pads) area	-	9.59 ha	-

Parameter	Original EIS Project	Final Modified Project	Extent of Change
Ancillary Infrastructure			
Operation and Maintenance Facility	1	1	*No change*
Connection substations	1	1	*No change*
Collector substations	2	1	Decrease by 1
Concrete Batch Plants	2	3	Increase by 1
Construction compounds	2	3	Increase by 1

Whilst the extent of ground disturbance has largely increased, this is primarily a result of more accurately estimating the impacts associated with the internal access tracks and underground cabling. For the internal access tracks, a nominal width of 10 m was allowed for associated with the Original EIS Project. However, this did not sufficiently account for the cut and fill required and to construct the Project, the widths would likely have been larger. For the underground cabling associated with the Original EIS Project, it was assumed it could be constructed in the same development footprint as the internal access tracks. However, for construction this is not possible and a separate disturbance footprint for the underground cabling associated with the Final Modified project has been allowed for.

These changes reflect the Proponents greater experience and knowledge compared with the assumptions used in the Original EIS Project.

Turbine Foundations & Hardstands

The wind turbine foundation refers to the concrete and steel structure on which the wind turbine is secured and the hardstand refers to the areas immediately adjacent to the wind turbine that is sufficiently compacted to handle the load of the crane whilst lifting the wind turbine components.

The variance of each hardstand footprint depends on the surrounding topography and subsequent earthworks required. On average, the foundation and hardstand area (excluding batters) is equal to approximately 3,732 m².

Ground disturbance due to the fill from the installation of blade fingers (e.g. two 'fingers' of temporary fill extending from the edge of each hardstand, creating a level area to laydown wind turbine blades ready for installation) has been minimised where possible. Whilst not optimal from a construction perspective, the construction schedule will allow 'just in time' delivery at some locations rather than having additional laydown areas for the blades.

Internal Access Tracks

The Indicative Development Footprint – Wind Farm includes the indicative access track layout. The design optimisation process found that the carriageway width of the internal access tracks requires a permanent pavement width of 5.5 m. However, the average 'worst case' temporary ground disturbance width for internal access tracks across the site is 30 m. The total length of internal access tracks is 89 km.

The design assumptions allow for an adequate amount of temporary ground disturbance (including ancillary drainage, batters and construction disturbance buffers, cut and fill and works to prevent erosion) which is driven by the complex and varied terrain of the Project site.

Underground Cabling (33kV and up to 330kV)

The indicative underground cable layout will run in parallel with the access tracks where practical to minimise the overall ground disturbance, however the cables will sit outside of the tops and toes of the construction batters. The design optimisation clarifies that a 7.5 m width of disturbance either side of the cable is required. There are ground disturbance savings where the cable disturbance can overlay with the access track disturbance, however it will not reduce the ground disturbance to zero. As such, an average 'worst case' temporary ground disturbance width for underground cables is assumed to be 15 m. The underground cable design ensures cable lengths are minimised to maximise energy efficiency, the cable can be installed safely while other construction work is underway and disturbance to vegetation is minimised. Once construction is completed the cabling trenches will be fully rehabilitated with no permanent ground disturbance.

Transmission Lines (33kV and up to 330kV)

The Transmission Line 33kV has an easement width of 20 m whilst the Transmission Line up to 330kV has an easement width of 40m. The ground disturbance for each transmission line pole will be approximately 400 m^2 whilst ground disturbance for each string pad will be approximately 2,500 m^2. The average ground disturbance width of the transmission line maintenance track will be approximately 12 m.

Preferred Transport Route

Transportation of heavy and over-dimensional vehicles requires the use of the local road network. The Preferred Transport Route has been selected from multiple local public roads approved for use within the existing Development Consent and in consideration of the associated road upgrades required and likely vegetation removal.

The Preferred Transport Route is accessed from Borrowa via Long Street, Dillon Street, Rye Park Road, Grassy Creek Road, Yass/Gunning Street and Rye Park/Dalton Road and is located entirely within the Hilltops Local Government Area (LGA). The site will be access via three access points on Rye Park Dalton Road and Grassy Creek Road. This is shown at Appendix C.

The necessary road upgrades will provide the local community with a consistent sealed road of higher quality than the current local road conditions.