

Paling Yards Wind Farm



Cumulative Impact Assessment

Abercrombie Road, Paling Yards NSW 2580

Prepared for Global Power Generation Australia Pty Ltd and Paling Yards Development Pty Ltd

Quality Assurance

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Introduction

1 Introduction

Tract Consultants Pty Ltd (Tract) has prepared this report on behalf of Global Power Generation Australia (GPGA), to provide a review of the potential cumulative impacts generated as a result of the proposed Paling Yards Wind Farm (PYWF) proposed at this location.

This report investigates and discusses the potential cumulative impacts of the PYWF development and other existing or planned wind farm projects within the region as part of the Environmental Impact Statement (EIS) process.

This Cumulative Impact Assessment (CIA) has been prepared in accordance with the project Secretary's Environmental Assessment Regulations (SEARs), the requirements in Part 8, Division 5 of the *Environmental Planning and Assessment Regulation 2021* and the *NSW Wind Energy Guidelines for State Significant Wind Energy Development (2016)*.

1.1 Introduction to Cumulative Impact Assessment

The Department of Planning and Environment's (DPE) *Cumulative Impact Assessment Guidelines for State Significant Projects, October 2022* (CIA Guidelines) states the purpose for assessing a project's cumulative impact is as follows:

The purpose of these guidelines is to set clear expectations and requirements for assessing project-level cumulative impacts related to State significant projects. As many cumulative impact matters are addressed through strategic planning, assessment and management, project-level CIA can be tailored to focus on the impacts that may arise due to the interactions between the project and relevant future projects in the same area and over similar timeframes.

The CIA provides an assessment of environmental, social, economic, and other impacts which may result from the Project when combined with other past, present, and reasonably foreseeable future projects. It has been prepared in accordance with the CIA Guidelines.

Cumulative impacts can be assessed at both a strategic-level and a site-specific level. Strategic-level CIA supports planning and development decisions at regional and local scales and is inter-related with project-level CIA. Project-level CIA builds on the findings of the EIS. The CIA Guidelines recognise that many cumulative impact matters are addressed through strategic planning, assessment, and management. For the purpose of this assessment, a project-level CIA can be tailored to focus on the impacts that may arise due to the interactions between the Project and relevant future projects in the same area and over a similar timeframe.

Importantly, this CIA has been established in the context of an existing baseline condition, which includes the consideration of the specific impacts of the Project on the area. This includes assessing the impacts of other relevant projects (current or planned).

This CIA has been prepared as part of the Environmental Impact Statement (EIS) and has been informed by the following documents and guidelines:

- *Cumulative Impact Assessment Guidelines for State Significant Projects* (CIA Guidelines) (DPE 2022, October).
- *Wind Energy Guideline* (Wind Guideline) (DPE 2016, December).
- *Wind Energy: Visual Assessment Bulletin* (Visual Bulletin) (DPE 2016, December).
- *Wind Energy: Noise Assessment Bulletin* (Noise Bulletin) (DPE 2016, December).
- *Secretary's Environmental Assessment Requirements* (SEARs) (2022, March 9).

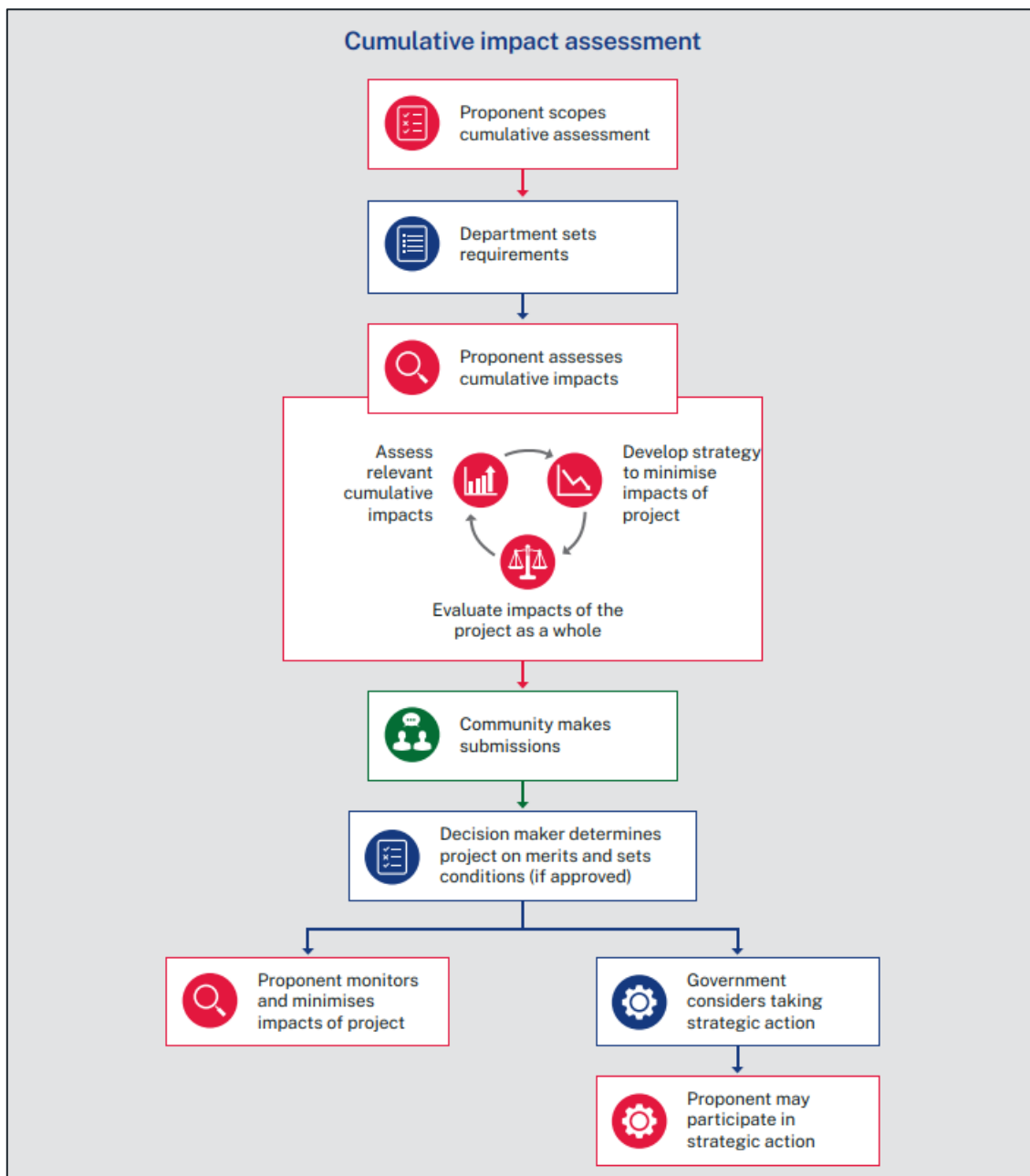


Figure 1. Key Steps in cumulative impact assessment (Source: CIA Guidelines, 2022)

1.2 Cumulative Impact Assessment Considerations

The PYWF CIA has been prepared to assess the incremental impacts of the Project in the context of the existing established base line condition in respect to each relevant assessment matter.

This CIA reviews and considers the following in assessment of the cumulative impacts arising from the Project:

- The areas of assessment included in the State's strategic framework.
- The key potential material impacts of the PYWF, on national parks and other protected areas, environmentally sensitive areas, threatened species and ecological communities, important natural resources, culturally significant resources, key infrastructure and industries, sensitive land use zones, population centres, settlements and residential areas.
- The likely scale of impact resulting from cumulative impacts when considering existing wind farms in the Oberon Region (such as, Crookwell 1 and Crookwell 2 Wind Farms) and surrounds, as well as any other proposed wind farm developments within the area. The CIA has included an assessment of wind farms up to 75km from the Project Area (refer Table 2).
- The impact of any other development, including development ancillary to, or otherwise associated with, the proposed wind farm e.g., transmission line and supporting wind farm infrastructure.

In addition to the above, a CIA has several dimensions:

- The impact of the wind farm, when added to the combined impacts of all other existing developments and environmental characteristics of the locality.
- The impact of the development in the context of the potential for development of wind energy developments in the local, regional and national context.
- The impact of developments which are ancillary to or otherwise associated with the proposed wind farm, such as the development of transmission lines and substations.
- The potential for future development of wind farms in the region.

This report should be read in conjunction with the EIS and the relevant consultant reports prepared as part of the Project.

2 Project Overview

2.1 Project Location

The PYWF is located on the western extent of the Great Dividing Range in NSW, 60km south of Oberon, 75km north of Goulburn and approximately 140km west of Sydney. The surrounding area is predominantly national park with the eastern edge of the site bordered by Kanangra Boyd National Park, while Abercrombie National Park borders its west and south.

The site is situated in the Oberon Local Government Area (LGA), to the north of the Upper Lachlan LGA.

2.2 Project Study Area

The study area selected for the scoping of this CIA has been informed by the Landscape Visual Impact Assessment (LVIA) *Paling Yards Wind Farm Report (Revision E)* prepared by Moir Landscape Architecture (Moir) in October 2022 as part of the response to SEARs.

The Study Area identified by Moir refers to the land associated with and surrounding the PYWF as defined by an 8km radius around the site. National parks and agricultural land border the site to the east, south and west, all of which are heavily vegetated.

2.3 Project Summary

A summary of the Project and key features of the locality are outlined in Table 1. Aspects of the Project have been considered when preparing this CIA to provide a comprehensive review of possible cumulative impacts to the site and the surrounding landscape.

Table 1. Project Summary of Paling Yards Wind Farm

Project Aspects	Description
Project Component Summary	<ul style="list-style-type: none">· Construction of up to forty-seven (47) Wind Turbines Generators (WTG) with an overall maximum blade tip height of 240m and a total of three (3) blades per turbine.· Construction of up to three (3) wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauges and potentially other electrical equipment.· Construction of 33/132kV on-site collector substations, including control room, maintenance building, switchgear and associate control system.· An on-site 132/500kV switching substation to connect to the existing TransGrid's 500kV Mount Piper to Bannaby transmission line (including control room and other associated grid connection facilities).· Approximately 8km of 132kV overhead powerlines (with a total easement width of 45m) to connect the collector substation to the switching station substation.· Cut-in works on the 500kV Mount Piper to Bannaby transmission line to connect it to the switching substation, resulting on a section of approximately 1km of 500kV transmission line (with a total easement of 70m).
Project Area	<ul style="list-style-type: none">· 4,600ha· Consists of separate land holdings referred to as 'Mingary Park', 'Paling Yards', 'Middle Station' and 'Hilltop'.

Site Entry and Road Upgrades	<ul style="list-style-type: none"> · Constraints exist along the potential project transport route and are currently being investigated. · Roadworks and upgrades to local road infrastructure at key access points along Abercrombie Road in addition to internal tracks for vehicle access to turbines and infrastructure. · Site entry will be at 5 different points off Abercrombie Road.
Temporary Facilities	<ul style="list-style-type: none"> · Establishment of a laydown area during the construction period. · A demountable site office and site store to be within the identified laydown area. · A temporary batching plant to supply concrete, including: <ul style="list-style-type: none"> • Material weighting system • Material conveying system • Cement silo • Water tank(s) • Concrete mixer • Operation station • Cold bin(s).
Public Exhibition	<ul style="list-style-type: none"> · Expected early 2023
Construction	<ul style="list-style-type: none"> · Construction is targeted to commence during mid-2023.
Operation	<ul style="list-style-type: none"> · It is expected that the wind farm will be operational between for up to 30 years (between 2025-2055). · Hours of operation will be 24 hours per day, 7 days per week.
Decommissioning and Rehabilitation	<ul style="list-style-type: none"> · WSP has prepared a Decommissioning and Rehabilitation Plan (DRP) to identify an appropriate methodology for decommissioning the PYWF facility and the site's rehabilitation once the Project reaches the end of its useful economic life.
Employment	<ul style="list-style-type: none"> · An estimated 152 full time employment positions during construction, up to four (4) full time ongoing positions during the operation of the wind farm, and up to six (6) additional full-time roles, which includes maintenance staff.
CIV	<ul style="list-style-type: none"> · \$599,677,000 (excluding GST).

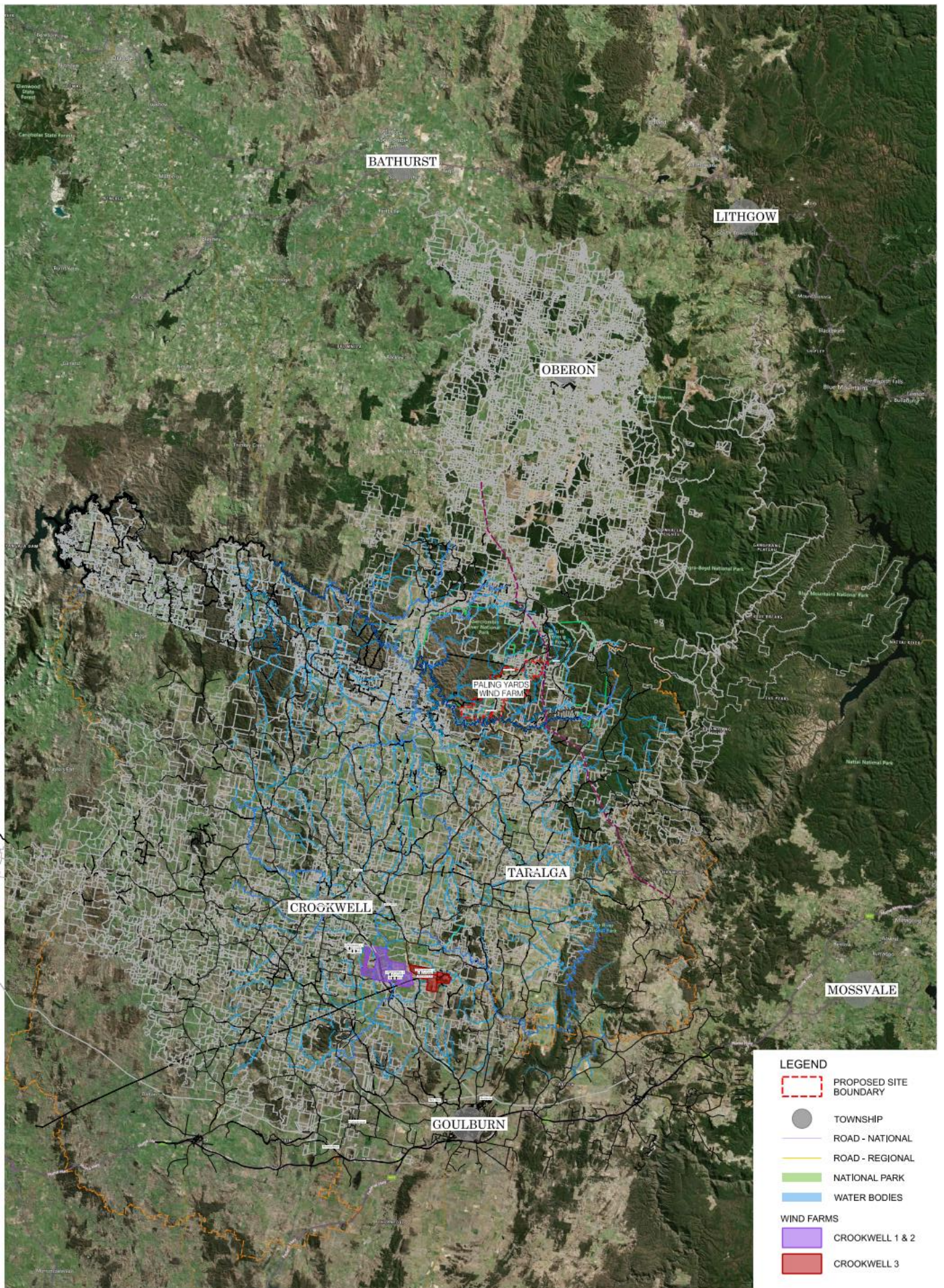


Figure 2. Site Context (Source: Tract 2022)

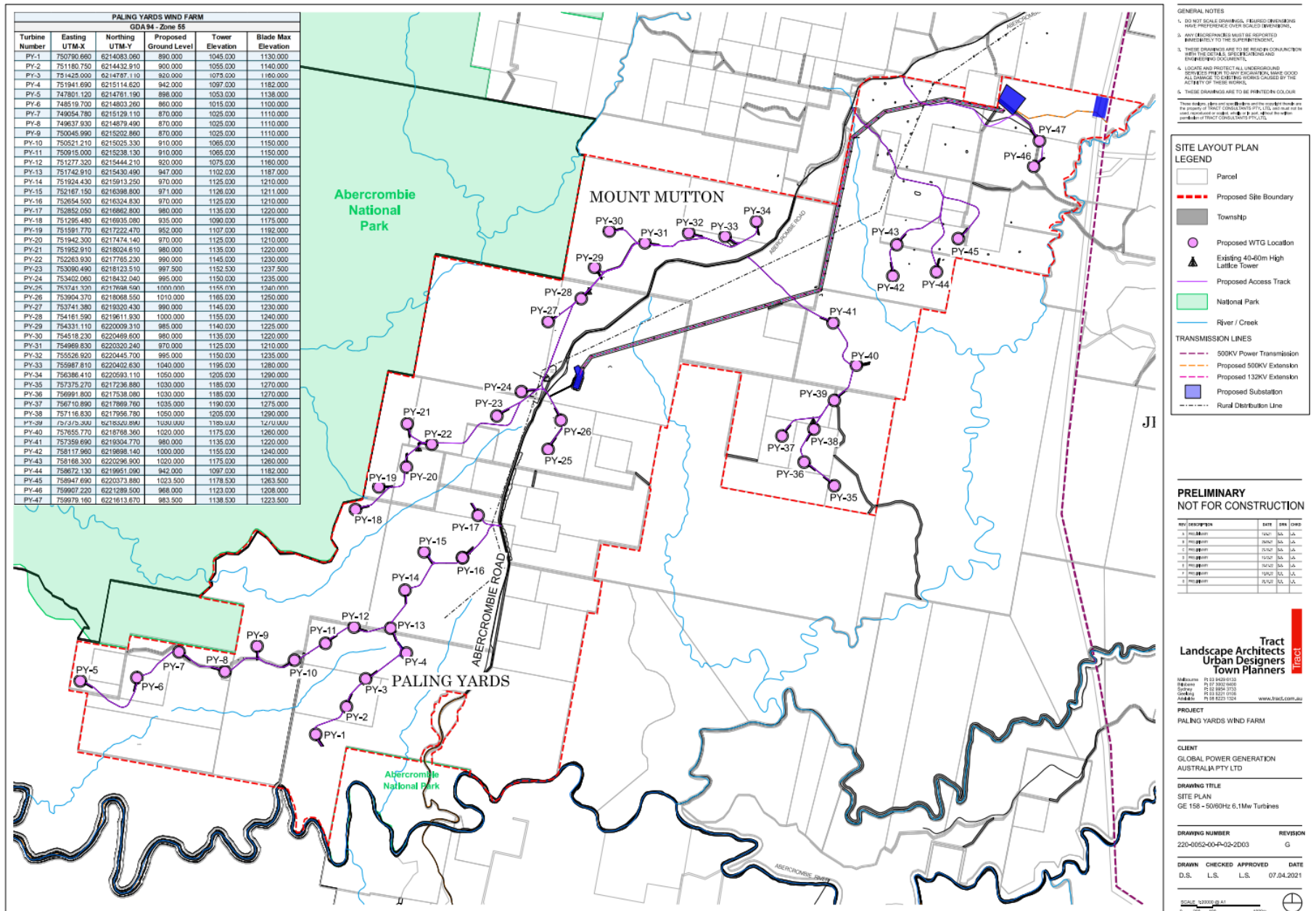


Figure 3. Wind Farm Site Layout (Source: Tract 2022)

3 Wind Farm Context

3.1 Central Tablelands Region

The Central Tablelands is known for its strong wind resource and includes several other wind farms in various stages of planning and development. Recent studies have shown that the average wind speed tested across the Paling Yards region is approximately 7.0 metres per second, which is generally considered a good wind resource for the operation of wind turbines.

Given the regions suitability for wind turbines and the generation of renewable wind energy, several companies are active in the broader region. The outcome of the available wind resources within the area has seen the NSW Government positioning Crookwell (located approximately 40km southeast from the PYWF Project) as a designated renewable energy precinct.

The closest to the PYWF is the Taralga Wind Farm, the Crookwell 1 & 2 Wind Farms, and the under-construction Crookwell 3 Wind Farm. The Crookwell 3 Wind Farm will essentially form an extension of the Crookwell 2 Wind Farm.

As stated above, there are several wind farm projects – either constructed or under construction – within a 40-50km radius of the Project Area. The possibility therefore exists that some of the impacts resulting from each of these developments/projects could combine with the potential impacts of the PYWF, generating more significant cumulative impacts.

Upon a review of the DPE Major Projects portal, other existing and planned wind farm projects have been identified in the region. A summary is provided below in Table 2.

3.2 Projects and Activities

Since committing to providing NSW with more diverse, affordable, modern energy systems, the NSW Government has encouraged the adoption of wind farms for providing a reliable and renewable energy source.

A majority of the wind farms are located along the east coast and regions along the higher exposed parts of the Great Dividing Range, New England and Southern Highlands. These areas have consistently high average wind speeds and are often close to existing transmission lines which allow for an efficient connection to the existing electrical grid.

Table 2 below provides an overview of existing Wind Farms in the region.

Table 2. Summary of the main Wind Farms in NSW

Wind Farm	Description
Taralga Wind Farm	Distance from site: 29km south east
	Status: Operational
	Number of Turbines: 51 wind turbines
	Comment: <ul style="list-style-type: none">· Commissioned in 2014· Capacity to generate up to 107 MW

Crookwell 1, 2 & 3 Wind Farms	Distance from site:	37km south
	Status:	Approved and operational
	Number of Turbines:	Crookwell 1 – 8 wind turbines Crookwell 2 – 28 Wind turbines Crookwell 3 – 20 Wind turbines
	Comment:	<ul style="list-style-type: none"> · Crookwell 1 – operational <ul style="list-style-type: none"> - 4.80MW capacity - Commissioned in 1998 · Crookwell 2 - operational <ul style="list-style-type: none"> - 91MW capacity - Commissioned in 2018 · Crookwell 3 – Under construction
Gunning Wind Farm	Distance from site	50km south
	Status	Operational
	Number of turbines	31 turbines
	Comment	<ul style="list-style-type: none"> · Commissioned in 2011 · Approximately capacity 47MW
Collector Wind Farm	Distance from site:	75km southwest
	Status:	Approved
	Number of Turbines:	55 wind turbines
	Comment:	<ul style="list-style-type: none"> · Commissioned in 2021 · Generating capacity of 226.8MW · Underground cabling
Cullerin Wind Farm	Distance from site:	74km southwest
	Status:	Approved
	Number of Turbines:	15 turbines
	Comment:	<ul style="list-style-type: none"> · Commissioned in 2009 · 15 Senvion Turbines of 80 metres in height. · Generation capacity 30MW

A number of wind farms identified within Table 2 are located within the Southern Highlands, a portion of which has been identified as being within the Illawarra Renewable Energy Zone. When assessing the cumulative impacts, consideration of the surrounding Wind Farms (existing, under construction and proposed) has been given (Figure 4). All relevant Wind Farms have been considered within this CIA and confirmed by a review of the Major Projects Planning Portal which indicated there were no other wind farms proposed or on exhibition for the Illawarra Region.

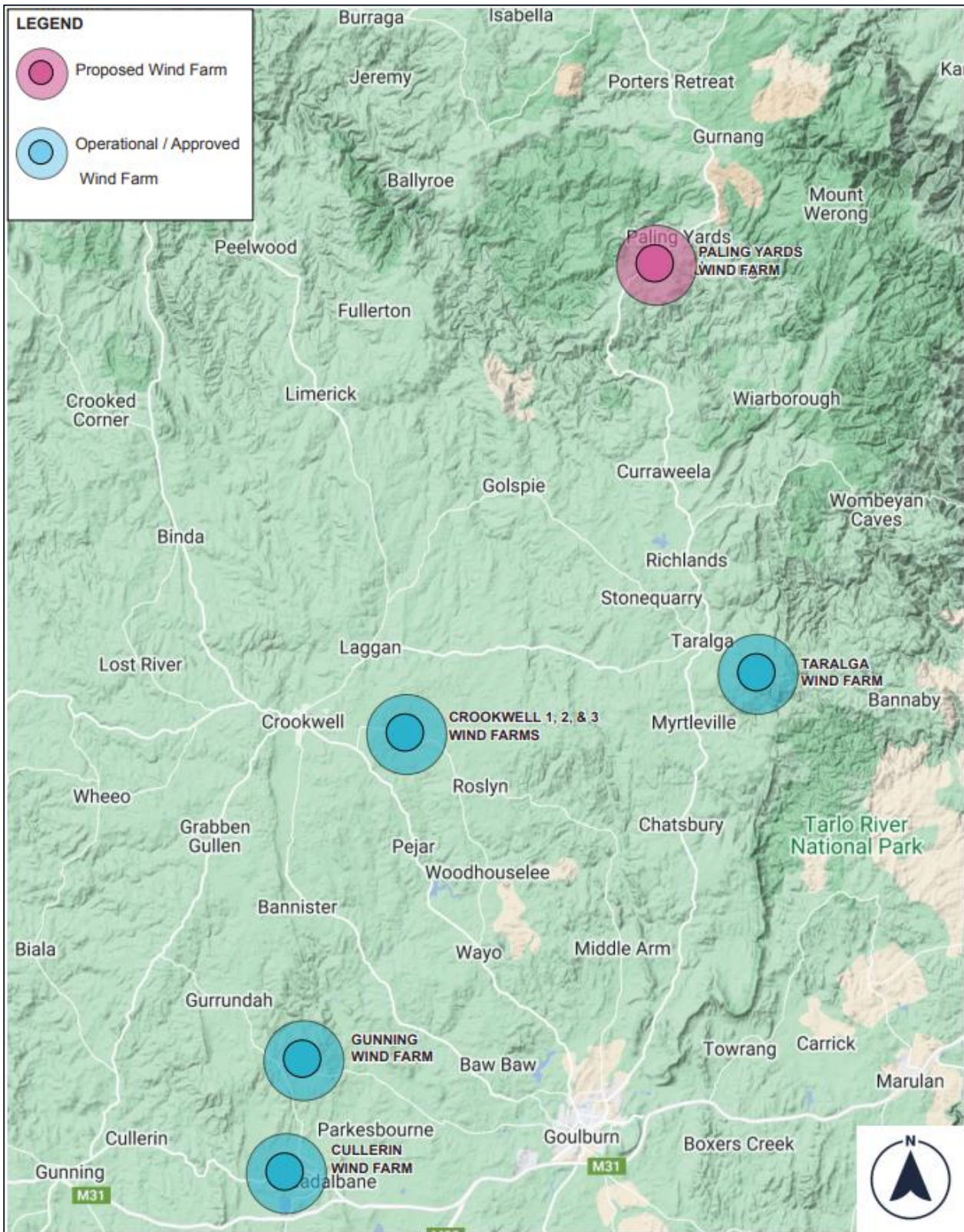


Figure 4. Wind Farms in the Region (Source: LVIA MOIR 2022)

3.3 Project Timeframe

It is expected that future wind farm developments will continue to be developed in the region during the PYWF Project's lifespan of 30 years.

Table 3 below indicates the indicative period where cumulative impacts from the PYWF and other renewable energy projects within the region could overlap.

Table 3. Summary of Potential Cumulative impacts over the PYWF's lifetime

Project Phase	Estimated Timeframe	Scale of Impact	Potential Cumulative Impacts	Duration
Assessment Phase	2022-2023	Minor	<ul style="list-style-type: none"> · Community health and wellbeing 	Temporary
Approval Phase	2023	Minor	<ul style="list-style-type: none"> · Community health and wellbeing 	Temporary
Construction Phase	2023-2025	Moderate to Major	<ul style="list-style-type: none"> · Wind Turbines Transport · Traffic and road access · Property access · Construction activities · Noise and Vibration · Dust · Visual amenity · Hazards and safety · Other environmental (Biodiversity, water, soils, heritage) 	Temporary
Operational Phase	2025-2055	Minor to Moderate	<ul style="list-style-type: none"> · Visual Amenity · Noise · Air quality and disturbances 	Ongoing
Decommissioning Phase	Post 2055	Moderate	<ul style="list-style-type: none"> · Wind turbines transport · Traffic and road access · Property access · Construction activities · Noise and Vibration · Hazards and Safety 	Temporary

Cumulative Impact Assessment

4 Cumulative Impact Assessment

4.1 Cumulative Impact Assessment Scope

As per the DPE CIA Guidelines, Table 4 provides a summary of the cumulative impacts to be assessed. The following key descriptions have been assigned to each of the impacts:

Key	
Detailed Assessment	<p>The Project may result in significant impacts on the matter, including cumulative impacts. Detailed assessment is characterised by:</p> <ul style="list-style-type: none">· Potential overlap in impacts between a future project (e.g. Project A) and the proposed Project· Potential for significant cumulative impacts as a result of the overlap, requiring detailed technical studies to assess the impacts· Sufficient data is available on the future Project to allow a detailed assessment of cumulative impacts with the proposed Project for the relevant matter· Uncertainties exist with respect to data, mitigation, assessment methods and criteria
Standard Assessment	<p>The Project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments are characterised by:</p> <p>Impacts are well understood</p> <ul style="list-style-type: none">· Impacts are relatively easy to predict using standard methods· Impacts are capable of being mitigated to comply with relevant standards or performance measures· the assessment is unlikely to involve any significant uncertainties or require any detailed cumulative impact assessment
N/A	<ul style="list-style-type: none">· No potential overlap in impacts between a future project (e.g. Project A) and the proposed Project that would warrant any consideration in the cumulative impact assessment

Below is a scoping table used to identify other wind farms within a 50km radius of the PYWF, and potential cumulative impacts.

Table 4. CIA scoping table.

Projects	Approx. Distance	Project Details	Access	Air and Noise	Amenity	Hazard and Risk
A. Crookwell 1 Windfarm (Operational)	39km South West	<ul style="list-style-type: none"> Project Completed. No expected construction overlap. 	N/A	N/A	N/A	N/A
	Key Features	<ul style="list-style-type: none"> 8 Wind turbines Commissioned 1998 5MW output 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project.
B. Crookwell 2 Wind Farm (Operational)	41km South	<ul style="list-style-type: none"> Project Completed. No expected construction overlap. Operations overlap; peak operations are expected approximately 20-25years after opening. 	N/A	N/A	Standard Assessment	N/A
	Key features	<ul style="list-style-type: none"> 28 turbines Commissioned 2018 91MW output 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> Low risk of cumulative visual impacts 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project.
C.	42km South	<ul style="list-style-type: none"> Project under construction. 	Standard Assessment	N/A	Standard Assessment	Standard Assessment

Projects	Approx. Distance	Project Details	Access	Air and Noise	Amenity	Hazard and Risk
Crookwell 3 Wind Farm (Approved)		<ul style="list-style-type: none"> No expected construction overlap. Operations overlap; peak operations are expected approximately 25-30 years after opening. 				
		Key Features <ul style="list-style-type: none"> 16 wind turbines Approved 2020 58MW 	<ul style="list-style-type: none"> Low risk of cumulative impacts relating to access, traffic and transport. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> Low risk of cumulative visual impacts. 	<ul style="list-style-type: none"> Low risks of cumulative impacts as a result of the Project. Impacts are capable of being mitigated to comply with the relevant standards or performance measures.
D. Taralga Wind Farm (Operational)	29km southeast	<ul style="list-style-type: none"> Operations overlap; peak operations are expected approximately 20 years after opening. 	N/A	N/A	Standard Assessment	N/A
		Key Features <ul style="list-style-type: none"> 51 wind turbines Commissioned 2015 107MW 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> Low risk of cumulative visual impacts because of the Project. Impacts are capable of being mitigated to comply with the relevant standards or performance measures. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project.

Projects	Approx. Distance	Project Details	Access	Air and Noise	Amenity	Hazard and Risk
E. Gunning Wind Farm (Operational)	50km south	<ul style="list-style-type: none"> Operations overlap; peak operations are expected approximately 20 years after opening. 	N/A	N/A	Standard Assessment	N/A
	Key Features	<ul style="list-style-type: none"> Commissioned in 2011 Approximate capacity 47MW 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> Low risk of cumulative visual impacts. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project.
F. Collector Wind Farm (Operational)	75km south west	<ul style="list-style-type: none"> Operations overlap; peak operations are expected approximately 20 - 30 years after opening. 	N/A	N/A	N/A	N/A
	Key Features	<ul style="list-style-type: none"> Commissioned in 2021 Generating capacity of 226.8MW 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project. 	<ul style="list-style-type: none"> No potential overlap in impacts between this existing project and the proposed project.
G. Cullerin Wind Farm (Operational)	74km south west	<ul style="list-style-type: none"> Operations overlap; peak operations are expected approximately 20 - 25 years after opening. 	N/A	N/A	N/A	N/A
	Key Features		<ul style="list-style-type: none"> No potential overlap in impacts between 	<ul style="list-style-type: none"> No potential overlap in impacts between this 	<ul style="list-style-type: none"> No potential overlap in impacts between this 	<ul style="list-style-type: none"> No potential overlap in impacts between this

Projects	Approx. Distance	Project Details	Access	Air and Noise	Amenity	Hazard and Risk
		<ul style="list-style-type: none"> 15 Senvion turbines, height of each turbine is 80metres. Commissioned in 2009 Generating capacity of 30MW 	this existing project and the proposed project.	existing project and the proposed project.	existing project and the proposed project.	existing project and the proposed project.
Assumptions		<ul style="list-style-type: none"> The proposed Project has undergone several assessments which has provided feedback into design of the proposed Project. Projects A, B, D, E, F and G are existing projects with no overall of impacts is expected Crookwell 3 is the only wind farm identified which is currently under construction, it is believed that construction will be complete before PYWF begins construction. This project is to be similar type, timeframe, and duration than the Project. No other wind farm projects have been identified within a 50km radius of the development area as part of this assessment. 				

4.2 Assessment of potential impacts

As part of this CIA, an overview of the surrounding proposed or operational wind farms was required to provide an accurate assessment of cumulative impacts which may arise.

The projects identified for assessment are all renewable energy projects and were considered relevant to the Project based on proximity, type of development, size of construction and/or operational workforce, and project timing. The potential combined cumulative impacts include visual, traffic, noise, biodiversity, social, health and land use impacts. Identifying these potential impacts at an early stage has allowed for design refinements throughout the Project development.

Project specific mitigation measures have been developed in consideration of these cumulative impacts and are considered appropriate to satisfactorily address the potential combined effects of other surrounding developments.

Below includes a detailed assessment of the potential cumulative impacts as a result of the Project.

4.2.1 Traffic Impacts

There are a number of developments within the vicinity of the Project which will be operational at the time of the proposed wind farm's construction and neighbouring properties. In particular, it is noted that the Crookwell Wind Farms, are the closest to the proposed site and sequentially share access via the same arterial roads of the area. GPGA, is currently developing Crookwell 3 (SSD-6695) which is under construction highlighting possible cumulative traffic impacts should the construction of the two wind farms overlap.

An assessment undertaken by SLR's traffic assessment team indicated that construction of Crookwell 3 is to commence in the second half of 2022 and continue into the first half of 2023. The construction of Paling Yards Wind Farm is not proposed to begin until the second half of 2023. It is expected, based upon the information above, that there would be no overlapping of the projects' construction and it is not necessary to consider traffic cumulative impacts of both developments.

Further, an assessment of traffic volumes was undertaken with key findings shown in Table 5 which provides an overview of the road networks surrounding the site, the data for the table was obtained from a traffic survey collected from 31 May to 7 June 2022.

Traffic conditions at peak hour, were calculated to depict construction traffic generation over approximately a 22-month period within which construction is predicted to be undertaken. The findings concluded that during the construction phase, there would be two peak hours.

Traffic generation relating to the construction workforce would be split 70% from Bathurst and 30% from Oberon, and it is estimated that a total of 19,000 return trips will be made over the 22-month period. There will further be an estimated 17,800 trips over the construction period relating to the haulage of equipment (wind turbines, transmission infrastructure, etc). Lastly, it is anticipated that 5,650 internal trips within the site will be made (to/from the concrete batching plant, etc). This brings the total traffic generated by the construction of the proposed development to around 40,500 over the 22-month period, which amounts to 86 movements a day (inbound and outbound).

It is believed that cumulative impacts because of traffic conditions would not be detrimental to the surrounding area and are temporary.

Table 5. Average Daily traffic (Source: SLR Traffic Assessment)

Road name	Jurisdiction	Average Daily Weekday Traffic	Average Daily Weekend Traffic	Average Daily Traffic	Posted Speed Limit	Road Classification
Abercrombie Road	Oberon Council	280	460	330	100km/h	Regional road (Road Number 256)

4.2.2 Social, Economic and Health

The presence of wind farms can have the potential to result in a number of cumulative impacts for the surrounding community. For the purpose of this CIA, an assessment of the social, economic and health impacts which may arise as a result of the proposed wind farm is provided. The following provides an outline of impacts identified and mitigation measures suggested to reduce the impact on the socio-economic realm.

- Employment

- Renewable energy projects often require a specific set of job skills. Often these skills are not by the local community and employment for renewable energy jobs are often outsourced.

- Comment

- Once the construction has been complete the employment rate for the wind farm is expected to be reduced to approximately 10 full-time (equivalent) jobs during operation.
- There will be an additional 10 contractors every 10 to 15 years as part of schedules major site maintenance and overhauls.
- Mitigation measure suggested is for the monitoring of skill shortages within the region and take into consideration with EPC recruitment objectives.

- Local disruptions

- Construction and operation of wind farms can contribute to the disruption of local communities, a number of disruptions were raised during initial stakeholder engagement. These include but are not limited to farming practices ranging from biosecurity risks to farm access impacts, interruptions to daily life due to construction traffic and component delivery, noise, vibration and local road deterioration which can also contribute to poor health of communities directly impacted by the developments.

- Comment

- Within the Social Impact Assessment provided as part of the EIS application it is noted that local disruptions are most likely to impact areas close to the Project site. The chance of cumulative impacts from surrounding renewable energy projects are expected to be minimal given the distance between projects. To mitigate these issues in the surrounding area and reduce the possibility of the further disruptions a number of mitigation measures have been noted which include:
 - Development and implementation of a Traffic Management Plan.
 - Development and implementation of a SEP to engage surrounding landowners and understand traffic movement within the area.

- Accommodation availability

- As previously mentioned, employment for the construction phase of these projects is often outsourced given the required skill set to construct certain renewable energy infrastructure. Locations of these renewable energy projects are often within rural landscapes with smaller populations and thus reduced accommodation availability. This places increased strain on available accommodation availability for the duration of the construction phase within the Project town and extends to surrounding localities.

- Comment

- Development and implementation of a Local Employment plan is recommended to mitigate these issues. Within these plans incentives are included as to reach the desired local recruitment goals. Ongoing monitoring is required to assess that goals are being met in accordance with the EPC and if not, it is recommended that a Workforce Accommodation Management Plan is introduced to manage the potential influx of workers.

Visual amenity

- Cumulative landscape and visual effects result from additional changes to the landscape or visual amenity caused by a proposed development.
- The re-occurrence of wind farms within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed.
- Given the size and extent of each turbine they can often be seen from far distances which has been identified within the Landscape Visual impact Assessment (LVIA), prepared by Moir, it is noted that given the sites topography some of the turbines of 3 wind farms will be visible as highlighted in Figure 5 below.

Comment

- The LVIA notes that the regions current landscape character allows for optimal conditions for wind farms and is overtime inevitable that the area will be utilised for renewable energy sources.
- Due to topography of the area, there are limited opportunities to view any additional wind farms and associated infrastructure simultaneously.
- Cumulative impacts associated with other wind farm projects will therefore be negligible.

Economic

- Increased development of renewable energy sources to regional areas contribute positively to the region's economy, both during the construction and operational phases. These economic benefits provide flow-on social benefits, particularly the provision of a range of employment opportunities and upgrades to local infrastructure.

Comment

- As mentioned above, renewable energy projects contribute positively to a community and the region's economy. Cumulatively, the economic impacts would be beneficial to the region given the development of additional wind farms reducing the community's reliance on energy derived from fossil fuels and supports the communities by further facilitating economic growth.
- To ensure the development will benefit the Oberon and surrounding community of the Paling Yards Wind Farm, a number of management measures have been suggested:
 - o Employment of regional residents where their skill sets, and experience can meet the requirements.
 - o Locally source non-labour inputs to production where local producers can be cost and quality competitive.
 - o Implement a neighbouring property benefit scheme so the eligible properties neighbouring the wind farm site see a direct benefit from the Project.
 - o Provision of community grants through various initiatives and programs within the local community, including education, arts, sporting and cultural sectors.
 - o Participation, as appropriate, in business group meetings, events or programs in the regional community.

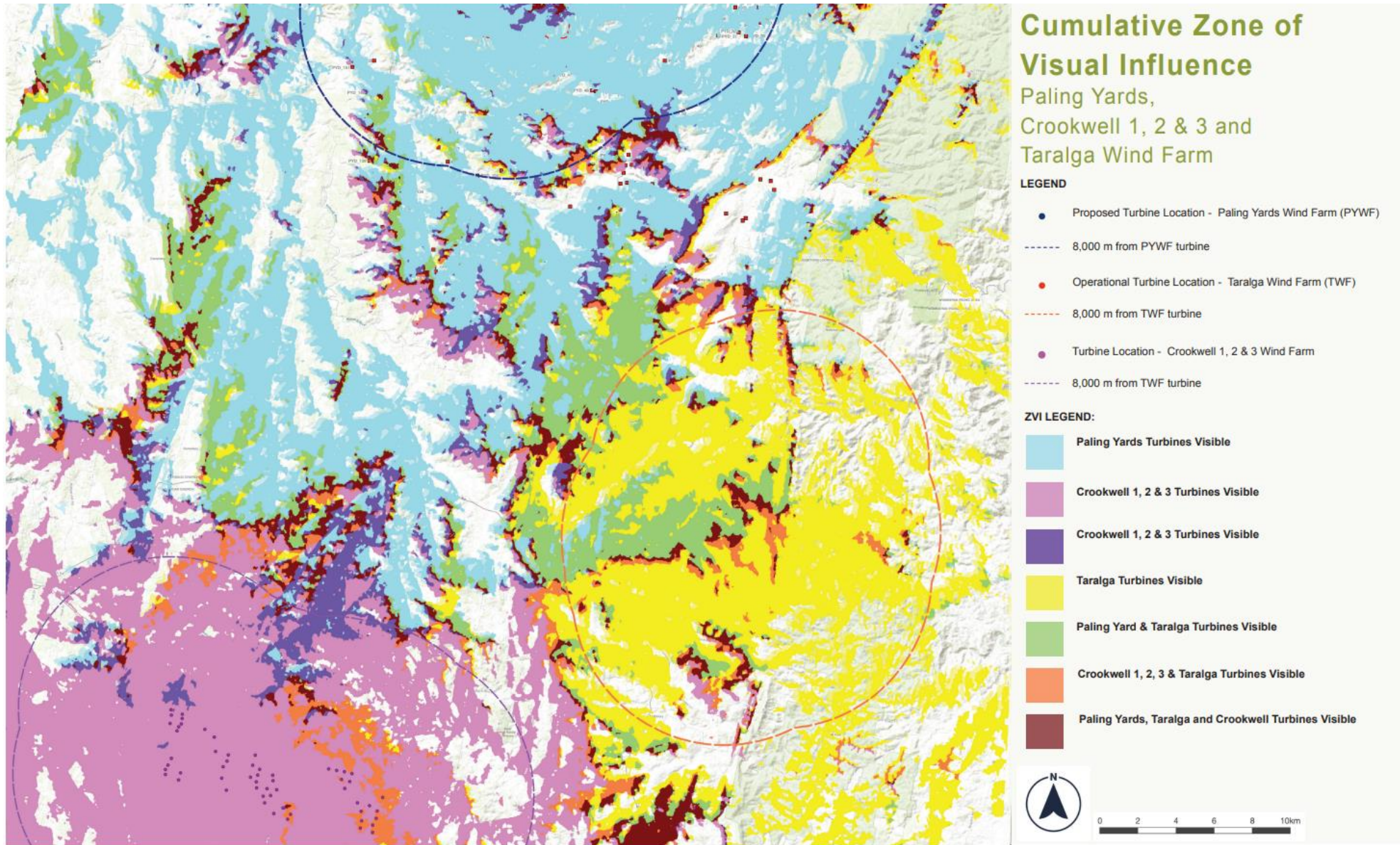


Figure 5. Cumulative Zone of Visual Influence for Paling Yards, Taralga, and Crookwell 1, 2 and 3 (Source: LVIA MOIR 2022)

- Heritage
 - Cumulative impacts on items of heritage including Indigenous heritage and non-indigenous heritage, are expected to be minor.
 - A Cultural Heritage Management Plan will be developed for the site, prior to the commencement of construction.

- Noise and Vibration Impacts
 - Vibration impacts from the operation and construction of the Project have been assessed and the 'worst case' scenario modelled were found to be acceptable.
 - Construction traffic noise impacts have been assessed and the 'worst case' maximum construction traffic scenario would comply with the relevant NSW requirements.
 - A construction management plan should be prepared to provide details and guidance on the relevant noise mitigation strategies for the construction stage.
 - Noise from the wind turbines has been assessed in accordance with the relevant guidelines. It was found that no significant noise impacts are anticipated for amenity and/or passive recreational uses within the locality. Noise optimisation measures were applied to 16 identified wind turbines to reduce the sound output of those turbines. The mitigated layout/configuration meets the relevant criteria at all involved and non-involved receptors.
 - Cumulative impacts from operation of the PYWF, as well as traffic and construction noise during the construction phase, are not considered to be detrimental to the amenity of the area. No other wind farms are located within 25km of the Site.

4.2.3 Impacts to the Natural Environment

- Biodiversity
 - Cumulative impacts on biodiversity associated with wind farm development are commonly associated with the increased risk of turbine strikes and the alteration of paths for migratory species.
 - The clearing of vegetation is associated with project construction.

Comment

- A number of birds and bats were recorded as part of the survey and were noted as frequenting the area. Increased development of wind farms has contributed to disruption of flight paths and habitats for some species. Overtime this may contribute to a decline in species within the area. A Bird and Bat Utilisation Survey has been prepared in as part of a management plan for the proposed development.
 - Further the BDAR suggests the development of a Flora and Fauna Management Plan to be prepared as part of the Construction Environmental Management Plan.
 - These Plans will provide mitigation measures which will help to mitigate cumulative impacts of the proposal.
 - While the project does not provide an approach to determine the number and class of biodiversity credits that are required for a prescribed impact, these impacts may be considered by a consent authority when determining the biodiversity credits required to be retired under the planning approval.
-
- Biosecurity
 - The construction phase of projects has the highest potential to create disturbance and potentially spread weed and pest species. The most notable vectors for the spread of weeds are from the increased movement

of vehicles and disturbances to soil from track work and vegetation clearing. Weed seeds can be transported into and through the site via clothing, vehicle wheels and undercarriages.

Comment

- Cumulative impacts for issues surrounding biosecurity are not considered to be a great concern for the region as it is believed the Project is unlikely to spread plant or animal diseases/pathogens. Mitigation measures have been identified as to further educate and therefore reduce the possibility of disease and the spread of weeds are managed.
- The following have been detailed within the Biosecurity Risk Management Plan as mitigation measures to be implemented.
 - Awareness and training.
 - Implement access procedures.
 - Vehicle hygiene.
 - Record keeping.
 - Targeted weed management.
 - Pest management.
 - If an incident was to occur requirement to follow the outlined biosecurity incident or risk.

It is understood that minor impacts may be experienced to the surrounding area beyond the defined scope of the PYWF Site. Early detection of these impacts is crucial in ensuring that the design is altered appropriately to be best suited for the site.

4.2.4 Aviation Impacts

The SEAR's required the Proponent to assess potential impacts on aviation safety, including cumulative effects of wind farms on the vicinity, potential wake / turbulence issues, the need for aviation hazard lighting, considering air traffic routes, aircraft operating heights, approach/departure procedures, radar interference, communication systems and navigation aids.

An Aviation Impact Assessment was prepared for the Project. Below the key findings:

- Obstacle lighting would result in a "moderate consequence", mainly at night and with good visibility conditions. While this is being assessed as having a possible long-term cumulative impact effect, it is not likely to be a decision making issue as design and mitigation measures are likely to improve some consequences.
- Recommended obstacle lighting treatments include:
 - It's been assessed that the Project will not require obstacle lighting to maintain an acceptable level of safety to aircraft.
 - Should any lighting be required, minimising the amount of obstacle light being installed by installing them only on selected turbines.
 - Consider lighting design that reduced the impact to neighbours
 - Mitigate light glare from obstacle lighting

No other cumulative impacts relating to aviation safety are expected as a result of the Project.

Conclusion

5 Summary

The Department requires that best practices are used during the application of a cumulative impact analysis. Mitigation measures have been identified for each possible cumulative impact should be adopted during the early phases of the Project aiming to minimise the impacts of the Project to the surrounding area.

The cumulative impact assessment is in proportion to the scale of the wind farm, the geographical area of influence of the Project and is relevant to the strategic context of the Project. Operational, approved, and proposed SSD projects within the region have been considered as part of this CIA.

It is understood that minor impacts may be experienced to the surrounding area beyond the defined scope of the PYWF Site. The early detection of these impacts has been crucial in ensuring that the design is redefined appropriately where required.

Several mitigation measures have been identified within the associated reports prepared for the EIS which assists in ensuring impacts to the surrounding environment are reduced. The reports outline several actions to be taken to help establish appropriate mitigation and management measures helping to minimise the Project's contribution to any relevant cumulative impacts on key matters within the identified area.

Further, the assessment of potential cumulative impacts has informed design refinements throughout the Project's design phase, taking into consideration the mitigation measures which have been developed in consideration to appropriately address the potential effects of other surrounding developments.

Cumulative impacts associated with the wind farm and other surrounding wind farms will therefore be negligible.