

State code 23: Wind farm development

Purpose statement

The purpose of the code is to protect individuals, communities and the environment from adverse impacts resulting from the construction, operation and **decommissioning** of **wind farm** development.

Wind farms should be appropriately located, sited, designed, constructed and operated to ensure:

1. the safety, operational integrity and efficiency of **air services** and aircraft operations;
2. risks to people, property and quality of life are minimised by providing acceptable levels of:
 - a. amenity and acoustic emissions at **sensitive land uses**; and
 - b. resilience to natural hazards;
3. development minimises adverse impacts on the natural environment, vegetation and associated ecological processes;
4. development in an area identified by a local government as having high scenic amenity appropriately manages impacts on the character, **scenic amenity** and **landscape values** of the locality;
5. the safe and efficient operation of transport networks and road infrastructure.

Using this code

The assessment benchmarks for this code comprise:

- a purpose statement which identifies the overall intent of the code;
- performance outcomes which set benchmarks to achieve the purpose statement of the code;
- acceptable outcomes which identify one way to achieve the relevant performance outcome.

Development complies with the code where:

- it complies with the acceptable outcomes for the performance outcome; or
- it complies with all the performance outcomes, where not complying with the acceptable outcomes; or
- development does not meet relevant performance outcome(s) and SARA determines, on balance, that the development complies with the purpose statement.

This code also includes the glossary of terms for definitions relevant to this code and reference documents; including the guideline – **State code 23: Wind farm development planning guidelines**, which provides direction on how to address this code.

Performance outcomes and acceptable outcomes

Table 23.1: Material change of use

Performance outcomes	Acceptable outcomes
Aviation safety, integrity and efficiency	
PO1 Development does not adversely affect the safety, operational integrity and efficiency of air services and aircraft operations as a result of its: <ol style="list-style-type: none"> 1. location; 2. siting; 3. design; 4. operation. 	No acceptable outcome is prescribed.
PO2 Development includes lighting and marking measures that ensure the safety, operational integrity and efficiency of air services and aircraft operations.	No acceptable outcome is prescribed.
Electromagnetic interference	
PO3 Development is designed, located and sited to protect pre-existing television, radar and radio transmission and reception from electromagnetic interference .	No acceptable outcome is prescribed.
Shadow flicker	

Performance outcomes	Acceptable outcomes
PO4 Development is designed so that the modelled blade shadow flicker impacts on existing or approved sensitive land uses do not exceed 30 hours per annum and 30 minutes per day.	No acceptable outcome is prescribed.
Flora and fauna	
PO5 Development is designed, sited and operated to ensure that flora, fauna and associated ecological processes are protected from adverse impacts.	No acceptable outcome is prescribed.
Vehicular access and movement	
PO6 Development provides suitable vehicular access, manoeuvring areas and parking for the ongoing operation and maintenance activities associated with the wind farm .	No acceptable outcome is prescribed.
Water quality	
PO7 Development maintains the water quality of receiving waters.	No acceptable outcome is prescribed.
Natural drainage patterns	
PO8 Development maintains the natural drainage patterns on the site by protecting: <ol style="list-style-type: none"> 1. bank stability by limiting bank erosion; 2. water quality objectives by filtering sediments, nutrients and other pollutants; 3. aquatic habitats; 4. terrestrial habitats. 	No acceptable outcome is prescribed.
Areas identified by a local government as having high scenic amenity	
PO9 Development in an area identified by a local government as having high scenic amenity is sited and designed to protect the character, scenic amenity and landscape values of the locality and region.	No acceptable outcome is prescribed.
Acoustic amenity	
PO10 Development is sited and designed to protect the amenity of existing or approved sensitive land uses on non-host lots from acoustic impacts.	AO10.1 A separation distance of at least 1500 metres is achieved between wind turbines and existing or approved sensitive land uses on non-host lots . OR AO10.2 Where wind turbines are proposed within 1500 metres of existing or approved sensitive land uses on non-host lots , written agreements (deeds of release) from all affected non-host lot owners are provided accepting the reduced setback.
PO11 The predicted acoustic level at all noise affected existing or approved sensitive land uses on host lots does not exceed the criteria stated in table 23.2.	No acceptable outcome is prescribed.
PO12 The predicted acoustic level at all noise affected existing or approved sensitive land uses on non-host lots does not exceed the criteria stated in table 23.3.	No acceptable outcome is prescribed.
Construction management	
PO13 Construction activities associated with the development do not adversely impact transport networks and road infrastructure.	No acceptable outcome is prescribed.

Reference tables

Table 23.2: Acoustic criteria for host lots

Acoustic criteria	
Noise description	Acoustic level does not exceed
The outdoor (free-field) night-time (10pm to 6am) A-weighted equivalent acoustic level (LA _{eq}), assessed at all noise affected existing or approved sensitive land uses .	<ol style="list-style-type: none"> 45dB(A); the background noise (LA₉₀) by more than 5dB(A); whichever is the greater, for wind speed from cut-in to rated power of the wind turbine and each integer wind speed in between referenced to hub height .

Table 23.3: Acoustic criteria for non-host lots

Acoustic criteria	
Noise description	Acoustic level does not exceed
The outdoor (free-field) night-time (10pm to 6am) A-weighted equivalent acoustic level (LA _{eq}), assessed at all noise affected existing or approved sensitive land uses .	<ol style="list-style-type: none"> 35dB(A); the background noise (LA₉₀) by more than 5dB(A); whichever is the greater, for wind speed from cut-in to rated power of the wind turbine and each integer wind speed in between referenced to hub height .
The outdoor (free-field) day-time (6am to 10pm) A-weighted equivalent acoustic level (LA _{eq}), assessed at all noise affected existing or approved sensitive land uses .	<ol style="list-style-type: none"> 37dB(A); the background noise (LA₉₀) by more than 5dB(A); whichever is the greater, for wind speed from cut-in to rated power of the wind turbine and each integer wind speed in between referenced to hub height .

Reference documents

Department of State Development, Infrastructure, Local Government and Planning, [State code 23: Wind farm development planning guidelines](#).

Glossary of terms

Air services means the premises used for any of the following:

- the arrival and departure of aircraft;
- the housing, servicing, refuelling, maintenance and repair of aircraft;
- the assembly and dispersal of passengers or goods on or from an aircraft;
- any ancillary activities directly serving the needs of passengers and visitors to the use;
- associated training and education facilities;
- aviation facilities.

Cut-in means the wind speed at which a **wind turbine** starts power production.

Decommissioning means that the **wind turbines**, site office and any other above-ground infrastructure is removed from the site, and roads, parking areas and foundation pads are covered and revegetated to return the ground to its former state.

Electromagnetic interference means disturbance or degradation of telecommunications signals currently in operation over the land use area. Includes signals transmitted via microwave, very high frequency and ultra-high frequency systems.

Height of a wind turbine means the maximum **height** reached by the tip of the turbine blades at their highest point above **ground level**.

Host lot means a parcel of land (lot(s)) that accommodates any part of a **wind farm** development.

Hub height of a wind turbine means the **height** of the hub measured from **ground level** (i.e. the **height** of the **wind turbine** without blades).

Landscape values means areas protected under a regional plan and/or local government planning scheme, such as biodiversity networks, natural economic resource areas (including rural production), **scenic amenity** areas and landscape heritage areas.

Non-host lot see schedule 24 of the Planning Regulation 2017.

Note: **Non-host lot** means a lot no part of which is used for **wind farm** or part of a **wind farm**.

Scenic amenity means a measure of the relative contribution of each place in the landscape to the collective appreciation of open space as viewed from places that are important to the public.

Sensitive land uses see schedule 24 of the Planning Regulation 2017.

Note: **Sensitive land use** means any of the following as defined in the Planning Regulation 2017:

1. caretakers accommodation
2. child care centre
3. community care centre
4. community residence
5. detention facility
6. dual occupancy
7. dwelling house
8. dwelling unit
9. educational establishment
10. health care services
11. hospital
12. hotel
13. multiple dwelling
14. non-resident workforce accommodation
15. relocatable home park
16. residential care facility
17. resort complex
18. retirement facility
19. rooming accommodation
20. rural workers' accommodation
21. short-term accommodation
22. tourist park.

Shadow flicker means a shadow that is cast under certain combinations of geographical position and time of day, when the sun passes behind the blades of a **wind turbine** and as the blades rotate, the shadow flicks on and off. The duration of this effect, which varies according to the time of the year, can be calculated from the machine geometry and the latitude of the site.

Transport networks mean the series of connected routes, corridors and transport facilities required to move goods and passengers and includes roads, **railways**, public transport routes (for example, bus routes), active transport routes (for example, cycle ways), freight routes and local, state and privately owned infrastructure.

Water quality objectives means the numerical concentration limits, mass or volume limits per unit of time or narrative statements of indicators established for waters to enhance or protect the **environmental values** for those waters set out in:

1. schedule 1 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, for water mentioned in the policy; or
2. otherwise – the Queensland Water Quality Guidelines 2009, Department of Environment and Heritage Protection, 2009.

Wind farm see schedule 24 of the Planning Regulation 2017.

Wind turbine see schedule 24 of the Planning Regulation 2017.

Note: **Wind turbine** means a machine or generator that uses wind force to generate electricity and includes the blades of the machine or generator.

Abbreviations

dB(A) – decibels measured on the ‘A’ frequency weighting network

L_{Aeq} – the equivalent continuous (time-averaged) A-weighted sound level

L_{A90} – the A-weighted noise level equalled or exceeded for 90 percent of the measurement period. This is commonly referred to as the background noise level