

State code 23: Wind farm development

Purpose statement

The purpose of this code is to ensure that the impacts arising from the construction, operation and **decommissioning of wind farms** do not result in unacceptable adverse impacts on individuals, communities and the natural environment.

Compliance with this code ensures that:

1. **threatened species**, habitats of **threatened species** and areas of high environmental value and associated habitat are not adversely impacted by the design, construction and operations of a **wind farm**;
2. those parts of the natural environment that are cleared and modified for the construction of a **wind farm** are rehabilitated to the maximum extent possible;
3. the environmental values of receiving waters are not adversely impacted by the construction of or ongoing operations of a **wind farm**;
4. erosion and sediment runoff from all areas cleared and disturbed during construction of a **wind farm** is appropriately managed;
5. all parts of the **wind farm** site that are modified to support ongoing operations and maintenance are stabilised to prevent erosion and sediment run off to surrounding landscapes and watercourses;
6. **wind farms** are resilient to **natural hazards** and the humans involved with the construction and ongoing operations are not exposed to unacceptable risks from **natural hazards**;
7. the quality of life for people associated with **sensitive land uses** is protected through managing the acoustic and amenity impacts of **wind farms**;
8. **workforce accommodation** associated with the construction of a **wind farm** does not cause unacceptable adverse impacts on individuals and surrounding communities;
9. **wind farms** proposed in areas identified by state or local government planning instruments as having high **scenic amenity** and/or **landscape values** do not significantly compromise those values;
10. the transport and haulage of **wind farm** components and construction materials does not cause unacceptable impacts on **transport networks** or local communities;
11. the safety, operational integrity and efficiency of **air services** and aircraft operations are not impacted or affected during the construction of and operation of a **wind farm**;
12. **wind farms** are **decommissioned** appropriately, sustainably and in a timely manner.

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.

Development complies with the code where:

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

There are no acceptable outcomes for this code.

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

Performance outcomes

Table 23.1: Material change of use

Performance outcomes
Protecting areas of high environmental value and minimising environmental impacts
PO1 Development is designed and sited to ensure that: <ul style="list-style-type: none"> • threatened species and associated habitats; and • areas of high environmental value are protected from adverse impacts.
PO2 Development is constructed to ensure that: <ul style="list-style-type: none"> • threatened species and associated habitats; and • areas of high environmental value are protected from adverse impacts.
PO3 Development operations ensure that threatened species and birds and bats are protected from adverse impacts.

Performance outcomes
PO4 Areas cleared for the construction of a wind farm are replanted to the maximum extent possible following construction without impeding operations and maintenance of the wind farm .
Natural drainage patterns
PO5 The wind farm , including ancillary infrastructure, is designed and sited to minimise crossings of and interference with natural drainage lines and watercourses.
Protecting water quality and erosion control
PO6 Development is designed and sited to avoid areas of high erosion risk , where failure of erosion management devices would result in permanent and/or adverse impacts on receiving watercourses.
PO7 Development is constructed to maintain or improve the water quality of receiving waters and watercourses by: <ul style="list-style-type: none"> • minimising erosion and run off; and • preserving the bank stability of affected watercourses and drainage lines.
PO8 Development is stabilised following construction to ensure that erosion and run off to the surrounding landscape and watercourses is minimised to the greatest extent possible.
Natural hazards and extreme weather events
PO9 Development is designed, sited, constructed and operated to be responsive to natural hazards and extreme weather events.
Acoustic amenity
PO10 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.
PO11 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.
Electromagnetic interference
PO12 Development is designed and sited to protect pre-existing television, radar and radio transmission and reception from electromagnetic interference .
Shadow flicker
PO13 Development is designed and sited 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.
Social impacts
PO14 On-site workforce accommodation of greater than 50 beds associated with the construction of the wind farm , does not result in adverse impacts on surrounding communities and townships.
Areas identified by state or local government planning instruments as having high scenic amenity
PO15 Development in an area identified by state or local government planning instruments as having high scenic amenity is sited and designed to protect the scenic amenity and landscape values of the locality and region.
Transport networks
PO16 Construction activities associated with the development do not adversely impact transport networks and infrastructure.
PO17 Development does not compromise the safety of users of the transport network .
PO18 Development delivers local and state-controlled road intersection upgrades to ensure construction activities do not adversely impact transport networks and infrastructure.
PO19 Development mitigates impacts on the safety, efficiency and condition of road infrastructure.
PO20 Development demonstrates that a safe, viable and practical haulage route can be secured to accommodate the movement of oversize/overmass vehicles during construction.
Aviation safety, integrity and efficiency
PO21 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.
PO22 Development includes lighting and marking measures that ensure the safety, operational integrity and efficiency of air services and aircraft operations.

Performance outcomes

Decommissioning

PO23 Development is **decommissioned** in a timely manner, disturbance footprints are rehabilitated, watercourses and drainage patterns are reinstated, and **wind farm** components are reused, recycled or repurposed to the greatest extent possible.

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 (LA_{90}) 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
Where a written agreement (deed) does not apply	
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 (LA_{90}) 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 (LA_{90}) 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 .
Where a written agreement (deed) applies	
The outdoor (free-field) night-time (10pm to 6am) A-weighted equivalent acoustic level (LA_{eq}), assessed at all non-host lots affected existing or approved sensitive land uses .	<ol style="list-style-type: none">45 dB(A);the background noise (LA_{90}) 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, [Planning guideline State code 23: Wind farm development](#)

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;

6. aviation facilities.

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

Decommissioning/decommissioned 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**.

High erosion risk see glossary of terms in IECA Best Practice Erosion and Sediment Control

Note: A high likelihood of soil erosion resulting from rain, wind or flowing water relative to a given risk rating (such as the various erosion risk ratings presented in Section 4.4 of Chapter 4 of IECA Best Practice Erosion and Sediment Control).

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.

Natural hazards see glossary in the State Planning Policy

Note: Natural hazard means a naturally occurring situation or condition, such as a flood, bushfire, landslide, coastal erosion or storm-tide inundation, with the potential for loss or harm to the community, property or environment.

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**.

Oversize/overmass vehicle a heavy vehicle or combination which alone, or together with its load, exceeds prescribed mass or dimension requirements, and is a heavy vehicle carrying, or designed for the purpose of carrying, a large indivisible item.

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.

Threatened species are those species defined in the *Nature Conservation Act 1994*.

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.

Note:

- (a) means the use of premises for generating electricity by wind force, other than electricity that is to be used mainly on the premises for a domestic or rural use; and
- (b) includes the use of premises for any of the following, if the use relates, or is ancillary, to the use stated in paragraph (a)—
 - (i) a **wind turbine**, wind monitoring tower or anemometer;
 - (ii) a building or structure, including, for example, a site office or temporary workers' accommodation;
 - (iii) a storage area or maintenance facility, including, for example, a lay down area;
 - (iv) infrastructure or works, including, for example, site access, foundations, electrical works, substations or landscaping.

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.

Workforce accommodation means the use of premises for accommodation of persons who perform work associated with the construction and operation of a **wind farm**.

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