

State code 23: Wind farm development

Purpose statement

The purpose of this code:

1. is to set out the minimum parameters of assessment necessary to demonstrate that a wind farm development can satisfactorily mitigate any unacceptable adverse impacts on individuals, communities and the **environment**; and
2. is to ensure that the impacts arising from the design, siting (including proximity to sensitive land uses), construction, operation and decommissioning of wind farms do not result in unacceptable adverse impacts on individuals, communities and the **environment**; and
3. is to ensure development for a wind farm is decommissioned in a timely and efficient manner that reuses, recycles, and/or repurposes materials to the greatest extent possible and **rehabilitates** the **environment**.

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 which must be complied with to achieve the purpose statement of the code.

Development complies with the code where:

- it complies with all relevant 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 guideline 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
Protected wildlife and associated habitats and areas of high ecological value
PO1 Development is located and designed to ensure that: • protected wildlife and associated habitats; and • areas of high ecological value are protected from adverse impacts.
PO2 Development is constructed to ensure that: • protected wildlife and associated habitats; and • areas of high ecological value are protected from adverse impacts.
PO3 Development operations ensure that protected wildlife and birds and bats are protected from adverse impacts.
PO4 Areas cleared for the construction of a wind farm are progressively rehabilitated to the maximum extent practicable following construction without impeding the safe and efficient operations and maintenance of the wind farm .
Agricultural land
PO5 Development is located and designed to ensure that there is no significant loss of high-quality agricultural land values.
Natural drainage patterns
PO6 The wind farm , including ancillary infrastructure, is designed and sited to minimise crossings of and interference with natural drainage lines, waterways and wetlands.
Protecting water quality and erosion control
PO7 Development is designed to avoid areas of high erosion risk , where failure of erosion management devices would result in permanent and/or adverse impacts on receiving waterways or wetlands.

Performance outcomes
PO8 Development is constructed to maintain or improve the water quality of receiving waters, waterways and wetlands by: • minimising erosion and run off; • managing drainage control; and • preserving the bank stability of affected waterways and drainage lines.
PO9 Areas cleared for construction are progressively stabilised during construction to ensure that erosion and run off to the surrounding landscape and waterways is minimised to the greatest extent possible.
Natural hazards and extreme weather events
PO10 Development is located, designed, constructed and operated to be responsive to natural hazards and extreme weather events.
PO11 Development is constructed and operated to protect the safety of people in the event of natural hazards or extreme weather events occurring.
Acoustic amenity
PO12 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.
PO13 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
PO14 Development is designed and/or mitigation measures are used to protect pre-existing television, radar and radio transmission and reception from electromagnetic interference.
Shadow flicker
PO15 Development is designed, constructed and operated 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
PO16 Development demonstrates that either: • a community benefit agreement has been entered into; or • where a community benefit agreement has not been entered into, social impacts of the development, including workforce accommodation, local business and industry impacts, community health and well-being, are identified, managed, mitigated, counterbalanced and monitored.
Areas identified by state or local government planning instruments as having high scenic amenity
PO17 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
PO18 Construction and ongoing activities associated with the development do not adversely impact the efficiency and condition of transport networks and infrastructure nor compromise the safety of users of the transport network.
PO19 Development delivers necessary upgrades to the transport network to ensure construction activities and ongoing maintenance do not adversely impact transport networks and 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 and ongoing maintenance activities.
PO21 Development provides safe, efficient, and sustainable vehicular access to the site for all vehicle types anticipated through the construction, operation, maintenance and decommissioning of the wind farm.
Aviation safety, integrity and efficiency
PO22 Development does not adversely affect the safety, operational integrity and efficiency of air services and aircraft operations as a result of its: 1. location; 2. siting; 3. design; 4. construction; 5. operation.
PO23 Development includes lighting and marking measures that ensure the safety, operational integrity and efficiency of air services and aircraft operations.
Decommissioning
PO24 Relevant components of development, both after completion of construction and at cessation of operations, are decommissioned in a timely and efficient manner.
PO25 Decommissioning ensures that materials removed from site destined for landfill are minimised while opportunities to reuse, recycle and /or repurpose are deployed to the greatest extent feasible.

Performance outcomes

PO26 Decommissioning at end of operations ensures disturbance footprints are **rehabilitated**, and **waterways** and drainage patterns are reinstated.

PO27 Decommissioning plans are secured by bonds or financial guarantees or other mechanism/s to safeguard compliance.

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 (8pm to 6am) A-weighted equivalent acoustic level (LA_{eq}), assessed at all noise affected existing or approved sensitive land uses .	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 (8pm to 6am) A-weighted equivalent acoustic level (LA_{eq}), assessed at all noise affected existing or approved sensitive land uses .	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 8pm) A-weighted equivalent acoustic level (LA_{eq}), assessed at all noise affected existing or approved sensitive land uses .	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 (8pm to 6am) A-weighted equivalent acoustic level (LA_{eq}), assessed at all non-host lots affected existing or approved sensitive land uses .	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 and Planning, [Planning guideline State code 23: Wind farm development](#)

Glossary of terms

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

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

Community benefit agreement see the Planning Act 2016.

Note: A **community benefit agreement** is an agreement, entered into under this division, about providing a benefit to a community in the locality of development requiring social impact assessment the subject of a development application or change application, including, for example—

- (a) providing or contributing towards infrastructure or another thing for the community; or
- (b) making a financial contribution to the community.

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

Decommissioning/decommissioned means the removal, rehabilitation and remediation of the wind farm in part, after finalisation of construction, then in entirety at cessation of operations. Decommissioning will be in accordance with strategies prepared by proponents and all decommissioning activities undertaken at full cost to proponents/operators.

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.

Environment see the *Environmental Protection Act 1994*, section 8.

Note: **Environment** includes—

- (a) ecosystems and their constituent parts, including people and communities; and
- (b) all natural and physical resources; and
- (c) the physical characteristics of locations, places and areas, however large or small; and
- (d) the physical surroundings of people, including the land, waters, atmosphere, climate, sound, odours and tastes; and
- (e) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (d).

Extreme weather events means an occurrence of a value of a weather or climate variable beyond a threshold that lies near the end of the range of observations for the variable.

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 ecological value means Matters of State Environmental Significance (MSES) as defined under Schedule 2 of the Queensland Environmental Offsets Regulation 2014. These matters can exist on publicly available resources such as Queensland Globe or be identified by a suitably qualified ecologist during a flora and/or fauna survey.

Examples of MSES include, but are not limited to, threatened wildlife habitat and/or known populations under the *Nature Conservation Act 1992* (e.g. wildlife habitat for threatened or Special Least Concern (SLC) species, essential habitat, koala habitat etc.), protected areas such as National Parks and Endangered or Of Concern remnant regional ecosystems.

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).

High quality agricultural land, means strategic cropping land, and priority agricultural areas, or Agricultural Land Classification (ALC) Class A and Class B land identified on the SPP interactive mapping system, Development assessment mapping system (DAMs) or local planning instruments.

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 Part F: Glossary of the State Planning Policy 2017

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 means a lot no part of which is used for **wind farm** or part of a **wind farm**.

Oversize/overmass vehicle means 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.

Protected wildlife means native wildlife that is prescribed under the *Nature Conservation Act 1992* as extinct wildlife, extinct in the wild wildlife, critically endangered wildlife, endangered wildlife, vulnerable wildlife, near threatened wildlife, least concern wildlife and special least concern plants or animals under the Nature Conservation (Animals) Regulation 2020 and Nature Conservation (Plants) Regulation 2020.

Rehabilitate/Rehabilitated means restoration of areas of disturbance created for the construction of and operations of a wind farm. Rehabilitate means the act of undertaking a range of activities that collectively endeavour to return the landscape (over time) back to its condition prior to the wind farm land use. These activities aim to achieve a safe, stable, non-polluting and sustainable landform (over time) through methods including, but not limited to:

1. **decommissioning** and removal of infrastructure;
2. remodifying some areas of civil works;
3. replanting with native vegetation species;
4. installation of habitat elements (e.g. fallen woody debris);
5. watering to enhance planting survival rates;
6. weed and pest management;
7. monitoring and reporting.

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
23. workforce accommodation.

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.

Social impact see the *Planning Act 2016*.

Note: **Social impact**, in relation to development requiring social impact assessment, means the potential impact of the development on the social environment of a community in the locality of the development, including the potential impact of the development on—

- (a) the physical or mental wellbeing of members of the community; and
- (b) the livelihood of members of the community and
- (c) the values of the community; and
- (d) the provision of services to the community, including, for example, educational services, emergency services or health services.

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.

Waterway see the *Fisheries Act 1994*.

Note: **Waterway** includes a river, creek, stream, watercourse, drainage feature or inlet of the sea.

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, facilities or devices for storing and releasing energy, 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.

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