Frost Control Fan CS-CP-309

(LOCAL POLICY)

1 Policy History

Revision No.	Council Meeting Date	Minute No.	Adoption Date
1	17 Oct 2000	713	17 Oct 2000
2	11 May 2010	0142	11 May 2010
3	13 Aug 2013	0255	13 Aug 2013
4	22 Aug 2017	17/205	22 Aug 2017
5	24 Mar 2020	20/086	24 Mar 2020
6	8 Nov 2022	22/291	8 Nov 2022

2 Policy Objective

- To find an equitable balance between the use of frost control fans and the amenity of surrounding residents.
- To address the interface issues regarding the installation and operation of frost control fans.
- To set standards appropriate for Griffith City Council LGA for the installation and operation of frost control fans.
- To allow for sustainable agriculture and continued agricultural growth.

3 Policy Statement

3.1 Introduction

Griffith City Council supports the horticultural industry within the Murrumbidgee Irrigation Area.

The Frost Control Fan Policy seeks to provide guidelines for the installation of permanent fans and use of mobile fans to reduce the adverse impacts of frost on horticultural crops, while reducing the likelihood of land use conflict within the locality.

With increasing interest expressed by fruit and nut growers to install frost control fans or mobile wind machines in our rural areas, the need has arisen to revise the initial guidelines as population density increases, in an effort to maintain primary production and to reduce land use conflict.

3.2 What is a frost control fan?

The principal function of the frost control fan is to mix the warmer air from higher atmospheric inversion layers with the cold air layer closer to the ground, normally reducing the risk of frost damage to horticultural crops.

A frost control fan is a machine that consists typically of a tower approximately 10 - 11 metres in height with two (2) to five (5) blades at the top, each being 2.5 - 3 metres long. An engine is mounted at the base of the tower and is used to drive the blade via drive shafts and gearing. The head of the fan rotates through 360 degrees on a vertical axis with the blade spinning between 400 -750 revolutions per minute. The head of the fan takes approximately 5 – 7 minutes to complete one 360 degree rotation.

3.3 Are all Frost Control Fans covered by this Policy?

From the date of adoption, this policy will apply to the installation of permanent and to the use mobile Frost Control Fans in the Griffith City Council local government area, with regard to noise emission / compliance.

Permanent Frost Control Fans require development consent where the use of mobile fans do not require Council's approval however, they are included in this policy for equity purposes with regard to noise emission for compliance testing. For further information see FAQ sheet.

3.4 In what planning zones under the Griffith Local Environment Plan 2014 are frost control fans permitted?

Frost control fans will only be permitted with Council consent in rural zones where intensive plant agriculture (e.g. orchards and vineyards) are permissible without consent. The primary production zones are RU1 Primary Production, RU2 Rural Landscape, RU4 Primary Production Small Lots and RU6 Rural Transition under Griffith Local Environmental Plan 2014.

3.5 What application requirements will apply to the installation of <u>permanent</u> frost control fans?

When a development application is submitted to Council for the installation of permanent frost control fans, it must be accompanied by the following information:

1) Scaled site diagram showing the proposed location of the frost control fan/s particularly in relation to dwelling houses within 1000 metres of the fans.

2) Structural engineer's certification and drawings for the footings and structural steelwork. (This information may be provided by the manufacturer).

3) Details of crop/s to be protected by the frost control fans; e.g. citrus, almonds, grapes, and the like.

4) Details of the anticipated temperature at which damage occurs to the crop/s proposed to be protected and the anticipated temperature that the fans would come on to protect the crop/s from frost and cut out to cease fan operation.

5) The number of frosts on average per year, which currently affect the crop/s to be protected, according to currently available climatic data. For example, Bureau of Meteorology data, or site specific data collected for the past 3 or 4 seasons. For further information see FAQ sheet.

6) Applicants are referred to Section 4.15 of the Environmental Planning and Assessment Act, 1979 to address its provisions in their statement of environmental effects, including the provisions of environmental planning instruments, development control plan, the likely impacts of the development and other relevant matters associated with their proposal.

7) An acoustic report, prepared by a suitably qualified acoustical consultant, is to be submitted with the application documentation, modelling the extent of impact of the proposed frost control fans upon surrounding non-associated dwellings, with all proposed and existing fans on the farm (or within the same ownership on adjoining or adjacent lands) operating simultaneously.

   The assessment model should be based upon manufacturer's sound level data, a copy of which is to be provided with the application. A map should be included in the report with the projected extent of the modelled 55 dB(A) and 45 dB(A) sound level 'contours'.

   Further, the report should provide a clear description of the parameters and atmospheric conditions upon which the modelling is premised (e.g. terrain - actual or theoretical, wind speed, temperature, inversion layer present, local known reflective surfaces such as Lake Wyangan, and the like).

   All noise assessment should be undertaken in accordance with AS 1055-2018 Acoustics – Description and Measurement of Environmental Noise and AS/NZ IEC 61672.1:2019 Electroacoustics – Sound Meter Levels Part 1 Specifications.

8) In relation to the manufacturers' sound power level data, the LAeq measurements must have been taken over a period of 15 minutes, and over a range of distances from 10 metres to 500 metres from the frost control fan. These manufactures' readings must be included in the information submitted with the Development Application.

9) If there are no non-associated dwellings within 1000 metres of the proposed frost control fans, the acoustic modelling report will not be required.

10) Notwithstanding point 9 above, if there are other permanent frost control fans within 1000 metres of the proposed frost control fans, the accumulated noise may impact upon surrounding non-associated dwellings, and an acoustic report will be required, taking into consideration the cumulative amenity impact of all of the fans, including those on the site.

11) The acoustic report should demonstrate how compliance will be achieved with the following criteria, for the closest non-associated dwelling outside the subject site or ownership, on a property not associated with the land over which the application is made, based upon zone of that land adjacent to the application property.

The following criteria apply to existing adjacent land use zones for the cumulative operation of all fans:

Location of affected residence	**Outdoor Criteria (L_{Aeq} 15 min)**	**Indoor Criteria (L_{Aeq} 15 min)**
Noise Sensitive Zone	45 dB(A) (max)	25 dB(A) (max)
Non-noise Sensitive Zone	55 dB(A) (max)	35 dB(A) (max)

12) If the indoor criteria (assuming all windows closed) can be met through the provision of noise attenuation measures at the closest non-associated dwelling rather than the external noise criteria, compliance will be determined at Council's discretion. Internal criteria can also be achieved through the installation of double glazing, and insulation of bedrooms for the dwelling for example.

Note:

1. A noise sensitive zone is a land use zone adjacent to the frost fan property, primarily meant for noise sensitive land uses typically meant for residential development under Griffith Local Environmental Plan, 2014. The noise sensitive zones are R1 General Residential, R5 Large Lot Residential and RU5 Village Zone, along with E4 Environmental Living Zone.

2. A non-noise sensitive zone is a land use zone adjacent to the frost fan property, primarily meant for primary production under the Griffith Local Environmental Plan, 2014, being RU1 Primary Production, RU2 Rural Landscape, RU4 Primary Production Small Lots RU6 Rural Transition.

3. Other non-noise sensitive land use zones include Environmental Protection Zones (e.g. E2 Environmental Conservation, E3 Environmental Management)

and Industrial Zones (e.g. Industrial General) where existing non-associated dwellings may be located adjacent to primary production lands.

4. Manufacturers' sound power level data must not just be based on the sound power output at 300 metres only, but readings taken at a range of distances & provided to Council.

5. Note that Council will retain all submitted acoustic reports, which will be made available upon request, for an application within 1000 metres of another property boundary, containing frost control fans.

3.6 What standards will apply to the operation of all frost control fans?

Once permanent frost control fans have been approved by Council, they must operate under the following conditions:

1. The frost control fans must have an auto-ignition thermostatic control that is set at all times to a temperature appropriate to the crop being protected, with an anemometer set to shut down the fan operation when wind speeds exceed 10km per hour.

2. The driving engine for the frost control fan must be housed in a noise attenuating housing with an integrated acoustic muffler.

3. As an initial compliance check, noise levels are to be taken following the installation of approved permanent frost control fans. This will be imposed as a condition of consent to ensure that the installed fans do actually achieve the applicant's stated decibel level. The compliance check should be conducted during the atmospheric conditions under which the fans are intended to operate (i.e. during a frost event). Compliance acoustic reports will be undertaken by a suitably qualified acoustical consultant, at the cost of the owner of the frost control fans.

4. The minimum sound data collection for a compliance check should be taken at a range of distances from 10m to 500m from the frost control fans. Further the sound data collection should also be taken at a distance of two to five (2 - 5) metres from a bedroom of the closest non-associated dwelling to the fans. Both data sets should be recorded for a minimum of 15 minutes (or two full revolutions). The resultant compliance report is to be provided to Council to complete the condition of consent, permitting Council to be satisfied that compliance has been achieved, or to advise that amelioration measures need to be taken to bring the fans into compliance.

5. Whilst all frost control fans are in operation, the noise level measured at a distance of 4 metres from any bedroom window of a non-associated dwelling situated on an adjacent property to that containing the frost control fans, must not exceed the outdoor or indoor limit as listed below:

Location of affected residence	**Outdoor Criteria (L_{Aeq} 15 min)** +2dB(A) considered compliant	**Indoor Criteria (L_{Aeq} 15 min)** +2dB(A) considered compliant
Noise Sensitive Zone	45 dB(A) (max)	25 dB(A) (max)
Non-noise Sensitive Zone	55 dB(A) (max)	35 dB(A) (max)

6. Compliance checks may be requested at any time, should official complaints be received by Council and there is doubt as to whether the subject frost control fans are operating in accordance with the development consent or this policy in the case of a mobile frost fan. Compliance acoustic reports will be undertaken by a suitably qualified acoustical consultant, at the cost of the fan operator.

7. Post installation noise compliance testing is to be in accordance with relevant Australian Standards, including but not limited to, AS 1055-2018 Acoustics – Description and Measurement of Environmental Noise and AS/NZ IEC 61672.1:2019 Electroacoustics – Sound Meter Levels Part 1 Specifications.

8. If, during post installation compliance testing, when measured in an approved manner, the noise from frost control fans is within 2 dB(A) of the limits listed within this Section, the frost control fans will be deemed to be in compliance.

9. The noise limits contained in this Section apply to the noise from all frost fans on the land under investigation, operating simultaneously; i.e. land over which frost fans have been approved, or lands in the same ownership which contain existing frost fans.

10. A Noise Management Plan should be prepared and provided to adjoining and adjacent non-associated residents within 1000m of the property where the frost fans are installed. This plan at a minimum should provide owner/farm manager contact numbers and emails, complaints procedure, advice on contact prior to impending frost and operation of fans and the like and potential noise mitigation measures to resolve complaints.

Note:

1. For a definition of noise sensitive and non-noise sensitive zones, see Notes 1 & 2 of Section 3.5 of this Policy.

2. Indoor noise levels are to be measured from the inside of a bedroom room of a residence (with all windows closed) not being on the same property as the subject frost control fans.

3. When a noise level check is carried out, the measurement period must be for at least 15 minutes.

4. All noise measurements are to be carried out by either a qualified noise control officer (as authorised under the POEO Act) or a suitably qualified acoustical consultant.

3.7 Can adjacent land alter from a non-noise sensitive zone to noise sensitive?

Council may rezone land which alters the type of the land uses within that new zone so that it becomes a noise sensitive zone. Council may consider changes to zones through a strategic land use strategy, though rezoning may also occur through a site specific planning proposal where Council will carefully consider the appropriateness of the change in predominant land use given the nature of the surrounding land.

3.8 Do the noise criteria apply to other development?

In the circumstance where land to be developed (e.g. subdivided or new dwellings constructed) is within 1,000 metres of existing and / or approved (but not yet installed) frost control fans, the future developer of the land subject to the rezoning or development application, will be responsible for addressing the issue of compliance with this policy.

This may be achieved by doing the following:

a) The provision of buffers to limit the location of future dwelling houses in relation to their proximity to the existing frost control fans; and / or,

b) Constructing dwellings to achieve the relevant indoor criterion for the land use zone within which the developed property is located; and / or

c) At the time of subdivision of that land, Council may impose a condition for the creation of a restriction on the title of the proposed lots, requiring certain noise attenuation measures to be incorporated into the design and construction of any proposed dwelling in that subdivision to enable the indoor criteria to be achieved.

3.9 What happens if complaints are received about an existing frost control fan?

1. In the first instance, a resident should make contact with the land owner or their nominated contact that the fan operation is of concern or disturbing them. The land owner / operator shall prepare a noise management plan under the development consent and will provide it to non-associated residents within the immediate vicinity (e.g. up to 1000 metres) of the property containing the frost fans to encourage dialogue in order to reduce the incidence of complaint and to aid conflict resolution.

2. The noise management plan should include, but not be limited to, contact telephone number of farm manager or land owner, after hour contact details, email address and the like, along with likely times of operation, permitted noise levels, a procedure for providing adjacent non-associated residents with advice on impending fan operation (e.g. 24 hour notice), complaint handling, and potential noise mitigation measures.

3. The noise management plan should be provided to Council for reference and inclusion in the development application / property file records.

4. In the event of non-compliance with the Noise Management Plan, Council will endeavour to establish a dialogue between the affected resident and the owner of the frost control fans, to raise the issues and to try and find possible resolutions.

5. Should any dialogues/negotiations fail, Council will re-assess the subject frost control fan against the requirements of this policy and any associated development consent.

6. Where complaints are received, the complainant should be prepared to allow Council's Officers or the proponent's acoustical consultant reasonable access to their property for the purpose of measuring the sound from the frost control fan if it is deemed necessary, during normal operation atmospheric conditions (i.e. during a frost when the fans are operating, which could be during the night or early hours of the morning). Council may seek to install a noise logger on the complaint's property for an extended period of time to record sound data for evaluation purposes.

7. Should Council receive a complaint concerning the operation of frost control fans, then noise level readings must be taken over at least three consecutive 15 minute (or two full revolutions) periods at 4 metres from any bedroom wall in the non-associated dwelling house the subject of the complaint. The noise level set for the frost control fans must be exceeded on more than two nights within a 60 day

period before Council will notify the operator of the frost control fan that action may need to be taken to ensure the fan operates within its consent.

8. If the frost control fan and its operation comply with its development consent and/or this policy, no further action will be taken. Should the subject frost control fans not be complying, further action will be considered. Where the noise limits are not met, the frequency of usage is a consideration in deciding what action to take. The level of noise exceedance will also be taken into consideration.

Note:

When noise measurements are to be taken, the following points will apply:

1. The sound level meter must be set to measure fast response A-weighted sound pressure levels and the levels must be measured in terms of the equivalent continuous sound level (Leq) metric and the duration of the measurements must be no less than 15 minutes or two full revolutions of the frost fan gear head.

2. Noise measuring instruments must be equivalent to Type 2 (or better) as defined in Australian Standard 1259 “Sound Level Meters”, Parts 1 and 2. The instrument is to be calibrated prior to use.

3. Apart from the provisions already contained in this policy, noise measurements must be conducted in accordance with Australian Standard 2659, “Guide to the use of Sound-measuring Equipment”, Parts 1 and 2.

4 Definitions

Noise sensitive zone is a land use zone adjacent to the frost fan property, primarily meant for noise sensitive land uses, typically meant for residential development under Griffith Local Environmental Plan, 2014.

Non-noise sensitive zone is a land use zone adjacent to the frost fan property, primarily meant for primary production or other general development under the Griffith Local Environmental Plan, 2014, and may include rural, some environmental protection and industrial zones.

Non-associated dwelling is a dwelling not located on the same land as the proposed / approved / existing frost fans, and in separate ownership to those lands.

5 Exceptions

None

6 Legislation

- Environmental Planning & Assessment Act 1979
- Protection of the Environment Operations Act, 1997
- Griffith Local Environmental Plan, 2014

7 Related Documents

- Sumar Produce Pty Ltd v Griffith City Council [2000] NSWLEC 104 (7 June 2000)
- Sumar Produce Pty Ltd v Griffith City Council [2000] NSWLEC 72 (11 April 2000)
- Sumar Produce Pty Ltd v Griffith City Council [2000] NSWLEC 27 (15 February 2000)
- NSW Environment Protection Agency Noise Guide for Local Government
- Griffith City Council Frost Control Fan Policy Frequently Asked Questions Addendum, available on Council's website
- AS 1055-2018 Acoustics – Description and measurement of environmental noise
- AS/NZ IEC 61672.1:2019 Electroacoustics – Sound meter levels Part 1 Specifications

8 Directorate

Sustainable Development