

Application for Approval to Use Bird Scaring Device

Owner Details

Owner Name: Capogreco Farms

Owner Address: 142 McClure Road, Hamel W.A. 6215

Phone: Work: [REDACTED] Home: _____ Mobile: _____

Email: [REDACTED]

Signature of Owner: 

Occupier¹ Details (if different from owner)

Occupier Name: _____

Occupier Address: _____

Phone: Work: _____ Home: _____ Mobile: _____

Email: _____

Signature of Occupier: _____

Applicant Details (must be either owner or occupier)

Applicant Name: Bruno Capogreco

Applicant Address: 142 McClure Road, Hamel W.A. 6215

Phone: Work: [REDACTED] Home: _____ Mobile: _____

Email: [REDACTED]

Signature of Applicant: 

Land Details

Lot No/s: 55, 57, 58, 301 & 60 Street No/s: _____

Street name: McClure Road

Locality: Hamel Current Land Use: Horticulture

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Other land owned or occupied in the locality where bird scaring devices are planned to be used: (Application must relate to all this land):

Proposed Bird Scaring Device Details

Type of Bird Scaring Device (incl. make and model): Gepaval-Guradian 2

Proposed number of Bird Scaring Devices: 4

Single or multiple blast bird scaring device (where applicable - state number): Single

Proposed time interval between bird scaring device blasts (6 minutes minimum): 6 minutes

Proposed setting (where applicable eg such as long or short): Short

Proposed days of week to be used: Monday to Sunday

Proposed hours of day to be used: (before sunrise, before 6am, after sunset and 11am-2pm not permitted):
6am to 9am, 10:30am to 2pm, 3:30pm to 7pm.

Proposed commencement date: December 20th 2021

Proposed date to cease use: April 30th 2022

Other methods of bird deterrent to be used other than Bird Scaring Devices:

Shoot plan as outlined by WA DPIRD.

Shoot to kill permitted by WA DBCA.

Minimum distance between bird scaring device and closest dwelling on adjacent lot (minimum 500m to dwelling):
400meters with extra noise mitigation to be equal to 500meter target.

Minimum distance between bird scaring device and adjacent street (minimum 50 metres): 100meters

¹ occupier means any person who is in control of any land or part of any land or authorised by the owner, lessee, licensee or any other person empowered to exercise control in relation to land to perform any work in relation to any land and without limiting the generality of the foregoing and for the avoidance of doubt includes a builder or contractor.



Friday, 22 January 2021

Reference: P190980LT1

Bruno Capogreco

Capogreco Farms
142 McClure Rd,
Hamel WA 6215

Dear Bruno,

Capogreco and Fruitico Farms – Bird Scare Gas Cannon Environmental Noise Emission Assessment

Reverberate Consulting has conducted a site visit on Friday 8 January 2021 to measure noise from two gas cannons, the:

- Gepaval “Guardian 2 standard” at the Capogreco Farm, 142 McClure Rd, Hamel, and
- Zon “Mark 4” gas cannon at the Fruitico Farm, Buller Road, Hamel.

The gas cannons are used to scare various birds away from crops and are routinely moved to areas where bird damage has been noted. We are advised that Capogreco farm, the cannon is normally set to fire once every 6 minutes. At Fruitico Farm on Buller Road, the cannon is normally set to fire a random number of shots (between 1 and 4) every 10 minutes. The cannons are normally in operation between 5 am to 11 am, and 2 pm to 7 pm.

Based on our measurements, we find that compliance with the Environmental Protection (Noise) Regulations 1997 requires at least the following minimum buffer distances:

- 400 metres during the day, and
- 900 metres during night and evenings.

These buffer distances apply where the cannon is pointed directly away from the residences. Increased buffer distances are required where the cannon is pointed in any other direction. Reduced buffer distances may be considered when shielding exists between source and receiver (e.g., from shielding such as that caused by hay bales stacked near the cannon). The buffer distances in this report are based on the ‘short’ cannon setting being used for Capogreco Farm and the ‘normal’ setting used by Fruitico Farm on their cannon. Increased buffer distances may be required for other cannon settings.

This letter report details our assessment.

Noise criteria

The Environmental Protection (Noise) Regulations 1997 (the Regulations) provide limits (Assigned Levels) on the noise received at nearby sensitive receptors in terms of a number of statistical parameters. Considering the nature of the gas cannon noise, the relevant statistic for the assessment is the $L_{ASmax, adj}$. Measurements of the cannon within 500 m showed the noise to possess an impulsive characteristic, thus measured levels presented have been adjusted upwards by 10 dB in accordance with the Regulations. The relevant noise criteria for different time periods are summarised in Table 1.

Table 1: Noise criteria

Time period	Definition	Noise limit (dB $L_{ASmax, adj}$)
Day	07:00 to 19:00, Monday to Saturday	65
	09:00 to 19:00, Sunday and Public Holidays	
Evening	19:00 to 22:00, all days	55
Night	22:00 to 07:00, Monday to Saturday	55
	22:00 to 09:00, Sunday and Public Holidays	

Measurements

Measurements were undertaken down-wind of the cannon at Capogreco Farm on a clear day during wind conditions favourable to the propagation of sound (higher noise levels), 3 to 5 m/s at distances of 250 and 500 m. Noise levels were also measured at a distance of 10 m from the cannon with both long and short nozzle settings of the Guardian 2 cannon at the Capogreco Farm. Measurements were also conducted on the Zon Mark 4 cannon at the Fruitico Farm. It was found that the shorter cannon setting at Capogreco was quieter than the long cannon setting, and that the Fruitico cannon on its 'normal' setting had approximately the same noise emission as the short setting on the Capogreco cannon. We are advised that the setting for the Fruitico cannon will not be changed.

All measurements were found to possess an impulsive characteristic; thus, they include an adjustment of 10 dB. Different automated shots generated slight variation in the overall noise emission from the cannons. The variation, represented by the standard deviation was found to be approximately 3 dB at all measurement locations. Measurements at 250 and 500 m downwind and 250 m crosswind (90 degrees) were undertaken simultaneously, and the cannon was rotated 180 degrees in between measurements to measure both in front and behind.

The instrumentation in Table 2 was used for the measurements. All sound level meters were field calibrated before and after the measurements. No significant drift was detected on any instrument, resulting in reliable measurements.

Table 2: Instrumentation details

Make	Model	Serial No	Calibration date
NTI	XL2	A2A12691E0	17/05/2019
Rion	NL18	00360043	21/12/2020
Rion	NL18	00990828	17/11/2020



Figure 1: Measurement and gas cannon locations, Capogreco Farms

Table 3: Measured noise levels (mean plus one standard deviation), inclusive of adjustment for impulsive character (dB $L_{ASmax, adj}$)

Receiver		Fruitico (normal) 10 m	Capogreco (short setting) 10 m	Capogreco (long setting)		
Location	Wind			10 m	250 m	500 m
Front	Downwind	113	113	120	79	73
Behind	Downwind	105	106	113	75	69
Side	Crosswind	-	-	-	69	-

Recommendations

Based on these measurements, we recommend the buffer zones listed in Table 4 and shown in Figure 2 to control cannon noise emission. These buffer distances apply to the Guardian 2 cannon on short setting and the Fruitico cannon on the normal setting. The Guardian 2 cannon on the long setting requires buffer distances more than twice as large as those shown below and so its use is not recommended without additional treatments/shielding.

These buffer zones have been established based on the measured “mean plus one standard deviation” $L_{ASmax, adj}$ for conditions favourable to the propagation of sound. The use of “mean plus one standard deviation” results in buffer distances which statistically allow in compliance for approx. 84% of all shots (assuming a normal statistical distribution). The remaining 16% of shots are likely to marginally exceed the Assigned Levels by 1 – 2 dB. This 1 – 2 dB exceedance is not detectable to an “average listener”¹ so the statistical approach adopted for this assessment is considered acceptable. Predictions used to establish buffer distances greater than 500 m are based on additional attenuation by geometric spreading and atmospheric absorption.

Table 4: Recommended buffer distances for Capogreco (short setting) and Fruitico (normal setting)

Time period	Cannon facing away from residence	Cannon facing towards residence
Day	400 m	600 m
Evening / Night	900 m	1,200 m

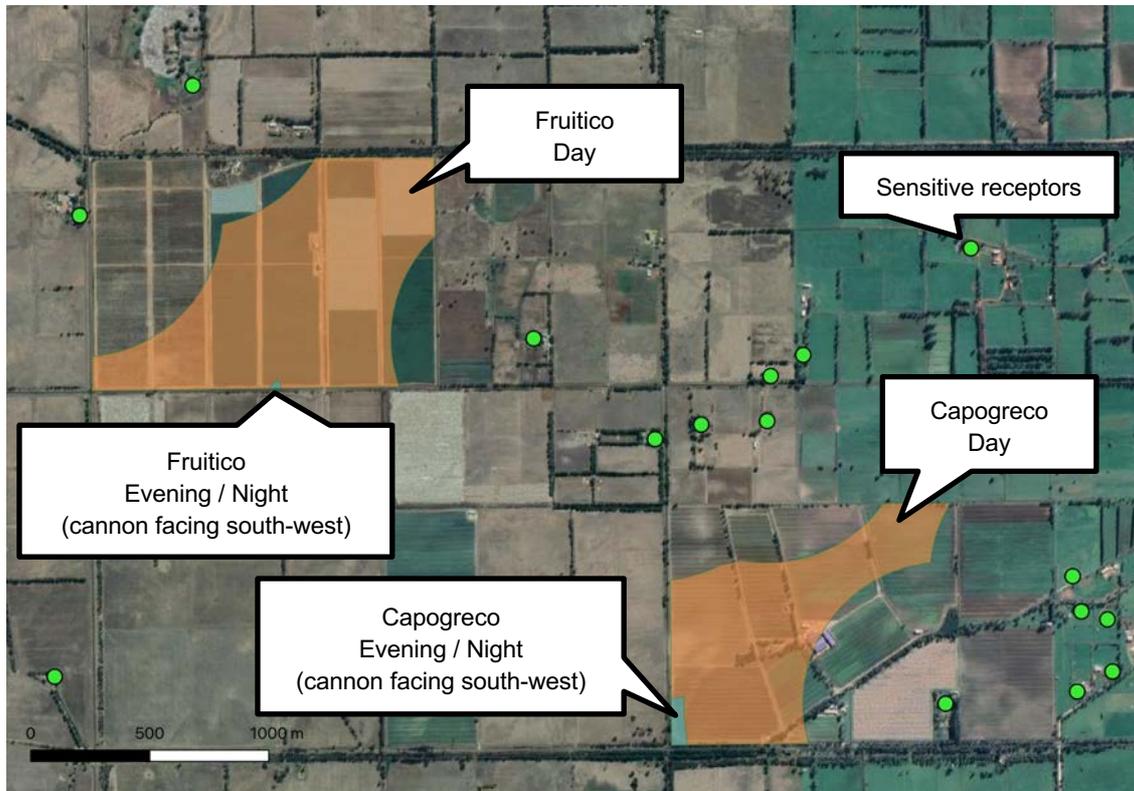


Figure 2: Recommended areas allowed for operation of the gas cannon (short tube setting for Capogreco, normal tube setting for Fruitico)

¹ Bies and Hansen (2009), Engineering Noise Control: Theory and Practice, Fourth Edition, Spon Press

The buffer distances have the potential to be reduced by setting up shielding close to the noise source (e.g., hay bales stacked near the cannon). Where the buffer distances in this report are too restrictive, we recommend further testing be conducted with the bales to establish the effectiveness of the shielding should this option be pursued, as these were not available at the time of testing.

Photographs of the gas cannons tested are provided in Figure 3 and Figure 4.

Note also, that measurements taken within 15 m of the cannon exceeded L_{pk} 140 dBC. Exposure to these noise levels is known to cause serious hearing impairment. It is strongly recommended that hearing protection be worn for any person within 30 m of the cannon.

Please let me know if you have any questions on the above.

Yours sincerely,



James Leader
Principal Acoustical Engineer

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Figure 3: Capogreco Farms gas cannon (long tube setting for long-distance noise measurements)



Figure 4: Fruitico gas cannon (tube length setting that was used for noise measurements)

Capogreco Farms – Complaints Form

Date: Time:	Person/s Involved making the complaint:
What is the complaint? Location:	Contact Number: Email:
What caused the problem?	Action Taken:
Short term fix (what can be done now to fix the problem)?	
Long term fix (what can be done to prevent the problem from happening again)	
Have the changes made been effective?	YES / NO
Reviewed by:	Signature: Date reviewed:
Date & Time this copy has been emailed to the Person/s involved:	

Capogreco Farms – Complaints Form

Further Comments & Notes: