

18 June 2007

Manildra Group  
Bolong Road  
Bomaderry NSW 2541

Our ref: 23/11918/57118  
Your ref:

Attn: Brian Hanley

Dear Brian

### **Shoalhaven Starches Short Flour Mill Odour Assessment - Additional Information**

I refer to Shoalhaven Starches' application to construct a short flour mill at the Bomaderry site, and GHD's previous involvement in quantifying the likely odour impact associated with the new plant.

GHD is currently working towards finalising an environmental audit of odour sources at Shoalhaven Starches premises. The odour audit has identified, measured and assessed all actual (and where possible, potential) offensive odours at both the Factory and the Environmental Farm. GHD is currently developing recommendations that seek to either prevent the generation of offensive odours from the premises or, where this is not possible, measures to minimise the emission of offensive odours.

I understand that additional information is required in order to demonstrate that the construction of the short flour mill, in combination with the implementation of key recommendations from the draft odour audit, would result in a significant net reduction in total odour units (OU) emitted from Shoalhaven Starches operations. This issue is addressed below, based on the draft results and recommendations of the odour audit.

#### **Draft Odour Audit Results**

Odour samples were collected from upwind and downwind of the spray irrigators at Shoalhaven Starches' Environmental Farm in order to quantify the odour generated by the irrigation process. Samples were taken from Pivot No 3 (Walsh's), which was fitted with fine mist sprays, and Pivot No 4 (Soppers), which was fitted with low-mist nozzles. The fine mist nozzles are fitted to all other pivot irrigators, including Pivot Nos 1 and 2. The odour emission rate (OER) for each of the irrigators is detailed in Table 1.

**Table 1. Odour Emission Rate - Spray Irrigators**

Odour Source	Application Rate (ML/hr)	OER (OU m <sup>3</sup> /s)
Pivot 1*	0.18	830,000
Pivot 2*	0.18	830,000
Pivot 3	0.25	1,200,000
Pivot 4 – low-mist nozzle	0.25	520,000

Notes: \* Result based on the measurements obtained for Pivot No 3.

It is apparent from the results that the low-mist nozzles used on Pivot No 4 generate 520,000 OU m<sup>3</sup>/s, while the mist nozzles on an equivalent irrigator generate 1,200,000 OU m<sup>3</sup>/s. The reduction in odour units associated with the use of low-mist nozzles is therefore approximately 56%.

Table 2 identifies and ranks the top ten odour sources from Shoalhaven Starches' operations in terms of total odour emission rate (OU m<sup>3</sup>/s). It is apparent that pivot irrigators Nos 3, 2 and 1 are the top three sources. Treatment of the largest odour sources (the pivot irrigators) would be expected to achieve the greatest proportional reduction in OU emissions.

**Table 2. Top ten odour sources by odour emission rate**

Rank	Sample	Discharge Plant	Total Odour Emission Rate (OU m <sup>3</sup> /s)
1	F9	Pivot irrigator No. 3 (mist nozzle)	1,200,000
2	F9	Pivot irrigator No. 2 (mist nozzle)	830,000
3	F9	Pivot irrigator No. 1 (mist nozzle)	830,000
4	F10	Pivot irrigator No. 4 (low mist nozzle)	520,000
5	F11	Traveller irrigator	163,000
6	S5	No. 4 gluten dryer baghouse	150,000
7	F1	Farm mixer tank vent	147,000
8	F8	Pond 6	131,000
9	F7	Pond 5	82,900
10	S3	No. 3 gluten dryer baghouse	73,300

Note: The odour emissions inventory is based on a worst-case scenario under which Pivots 1, 2 and 3 operate simultaneously. Pivot No 4 would not operate in conjunction with Pivot No 3.

#### **Draft Odour Audit Recommendations**

A key recommendation of the draft odour audit is the replacement of all existing mist nozzles on all pivot irrigators with new low-mist nozzles. Assuming that a 56% reduction in odour units emitted from the irrigators is realised, implementation of this measure would be expected to reduce total OU emissions from the Environmental Farm by up to a maximum of 1,600,000 OU m<sup>3</sup>/s when pivot irrigators Nos 1, 2 and 3 are operational (typical during summer). The reduction in odour units would vary depending upon the number of pivot irrigators in use at any one time, which would be affected by weather conditions and season.

#### **Implications for the Short Flour Mill Odour Assessment**

The Short Flour Mill Environmental Assessment Air Quality and Environmental Management Report prepared by GHD in April 2007 quantified the likely odour emissions from the short flour mill at 4,300 OU m<sup>3</sup>/s.

It is therefore expected that the implementation of the low-mist nozzle replacement program, in combination with the addition of the new short flour mill, would result in a net reduction in odour units of up to 1,595,000 OU m<sup>3</sup>/s under a best case scenario in summer.

The assessment indicates that the reduction in odour units associated with the nozzle replacement program would be significantly greater than the additional odour units contributed by the new flour mill, and would therefore be expected to result in a significant reduction in the odour units emitted from the premises despite the addition of the new flour mill.

The final recommendations of the odour audit would also address the remaining top 30 odour sources (which together contribute 99% of the total odour emissions from the operations), plus other sources that have a very unpleasant hedonic tone. The progressive implementation of these recommendations (over a period of time to be agreed between the Land and Environment Court, DECC and Shoalhaven Starches) would be expected to further and significantly reduce total odour unit emissions from Shoalhaven Starches' operations.

If you require any further information please do not hesitate to contact me.

Yours faithfully  
GHD Pty Ltd

A handwritten signature in black ink, appearing to read 'James Ellaway', with a stylized, flowing script.

**James Ellaway**  
Senior Environmental Scientist  
02 4424 4922