NSW GOVERNMENT | Environment, Climate Change & Water

PCU019603

Our reference: DOC11/8667
Contact: Zack Thomas 9995 5770

Ms Emma Barnet
Environmental Planning Officer
Major Development Assessment
Department of Planning
PO Box 39
Sydney NSW 2001

REGISTERED POST & EMAIL

Dear Ms Barnet

RE: Elf Mushroom Farm and Substrate Plant (08_0255)
Exhibition of Environmental Assessment Submission

DECCW refers to your letter dated 13 December 2010 received by the Department of Environment Climate Change and Water (DECCW) on 15 December 2010. The letter requests DECCW's submission regarding the Environmental Assessment ("EA") for a proposed Mushroom Farm at Londonderry ("Elf Mushrooms) and the expansion of the Substrate Plant at Mulgrave ("Elf Farm Supplies Pty Ltd"). Elf Farm Supplies Pty Ltd currently holds Environment Protection Licence No. 6229. DECCW also refers to a letter from T W Perram and Partners Pty Ltd dated 21 January 2011 in relation to DECCW's concerns regarding off site impacts on adjacent vegetation at the Londonderry site (Ref: 119/121L12).

Please note that, although the Environment Protection Authority ("EPA") is now a part of DECCW, certain statutory functions and powers continue to be exercised in the name of EPA.

DECCW has conducted a review of the EA provided and has identified several issues that should be addressed as recommended conditions of approval of the project application. DECCW has outlined the further information that is required in the following attachments:

- Attachment 1 - Air Quality Issues
  - Attachment 1A – Assessment against issues identified during adequacy review of substrate plant AQIA
  - Attachment 1B – Additional issues with substrate plant AQIA
  - Attachment 1C – Issues with Mushroom Farm AQIA
- Attachment 2 - Aboriginal Cultural Heritage Issues
- Attachment 3 - Wastewater Management Issues
- Attachment 4 - Recommended Noise Limits

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If you have any questions, or wish to discuss this matter further please contact Zack Thomas on 9995 5770.

Yours sincerely

14.2.11

ROB HOGAN
Manager Waste Operations
Environment Protection and Regulation

ATTACHMENT 1: AIR QUALITY ISSUES

BACKGROUND

The proposed expansion of the mushroom industry in Western Sydney includes a new mushroom farm at Londonderry and expansion of an existing mushroom substrate plant at Mulgrave (Elf Farm Supplies). Elf Farm Supplies hold Environment Protection Licence (EPL) number 6229.

The proposed new mushroom farm at Londonderry will produce up to 220 tonnes of mushrooms per week. The main building will contain 50 mushroom growing rooms. The first stage of the development comprises 18 growing rooms and the remaining 32 growing rooms will be developed over a further four stages. The spent mushroom substrate will be processed on site into a fine grained organic material suitable for top dressing for turfed sporting fields. There will also be an on-site secondary sewage treatment plant and the effluent will be disposed of by subsurface irrigation within landscape mounds.

The expansion of Elf Farm Supplies will occur in three stages over approximately 10 years and enable the plant to produce up to 3200 tonnes of Phase 1 substrate per week. The plant is currently restricted to 1000 tonnes of Phase 1 substrate per week. The development will include two additional Phase 1 tunnels, an extension to the pre-wet building, a second Phase2/3 tunnel building and a second bio-scrubber which will be discharged through a 40m stack. The additional bio-scrubber will service the existing and pre-wet building extension and the existing bioscrubber will treat air from the Phase 1 tunnels and the raw materials storage area.

Concurrent concept plan and staged development approval is being sought for both developments. Regarding the staged development for the proposed expansion of Elf Farm Supplies, further approval would need to be obtained for the increased production in Stage 3 (3200 tonnes)[1].

The adequacy review of the air quality impact assessment (AQIA) for the expansion of the substrate plant identified the following issues:

- Methodology used to incorporate meteorological data in CALMET;
- No analysis of the CALMET generated data to demonstrate it adequately describes the expected meteorological conditions at the site;
- Bioscrubber odour emission rates do not reflect the proposed operating conditions at the site; and
- Use of far field peak to mean ratios when residents are located in the near field.

A final Environmental Assessment (EA) for the proposed expansion of the mushroom industry has been submitted[2]. The Department of the Environment and Climate Change (DECCW) has reviewed the AQIA's and its findings are presented below.

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[1] Stage 3 coincides with two additional phase 1 tunnels

[2] PAEHolmes, 2010a *Air Quality Assessment, Expansion of Substrate Facility, Mulgrave, Elf Farm Supplies*, 9 December 2010; and
PAEHolmes, 2010b *Air Quality Assessment, Proposed Mushroom Farm, Londonderry Elf Mushrooms*, 11 November 2010.

CURRENT POSITION

Expansion of Substrate Plant

DECCW has reviewed the AQIA for the expansion of the substrate plant and assessed the report against the issues identified during the adequacy review (Attachment 1A). The main outstanding issues have generally been addressed.

Odour performance criterion for the expansion project
Sensitive receptors are located to the east and west of the site. Based on the guidance in DECCW's Odour Policy[3], the appropriate odour assessment criterion for the receptors to the west of the site is 2 OU whereas 4 OU is the criterion for the receptors to the east of the site. Near field and far field peak to mean ratios would also be applied depending on the distance sensitive receptors are from the site.

The odour emission limit for the existing bio-scrubber stack was based on modelling using Ausplume V5.4, an odour emission rate of 54, 996 OUm^3/s and far field peak to mean ratios at all sensitive receptors regardless of their distance from the site. Compliance with the 2 OU criterion was predicted at all sensitive receptors. This approach has proven to be generally protective of offensive odour as the facility currently receives a small number of odour complaints each year.

DECCW recommends an odour performance criterion of 2 OU in combination with far field peak to mean ratios should be applied to the expansion project as it has been demonstrated to adequately protect against offensive odour.

Proposed expansion must minimise odour
The Odour Policy requires modified activities to incorporate all best practicable means to prevent or minimise odour. The storage of stable bedding in the open is not best practice for prevention or minimisation of odour. As part of the proposed expansion, the proponent should reconsider the stable bedding storage area in the context of the Odour Policy requirements to minimise odour emissions. The stable bedding stockpile was confirmed by Regional Operations Officers to be the cause of an odour complaint received by DECCW on 18 January 2011.

Proposed expansion unlikely to cause offensive odour
In comparison to the existing facility, Stage 1 of the proposed expansion is predicted to marginally increase 99th percentile odour concentrations at the surrounding sensitive receptors. The predicted 99th percentile odour concentrations for Stage 2 of the proposed expansion are approximately equal to the existing impact of the facility. The maximum 99th percentile odour concentration predicted at a sensitive receptor for Stage 2 of the expansion is 2 OU, the recommended odour assessment criterion.

Proposed expansion is within existing licence limits
The odour emission limit for the existing bio-scrubber (proposed Bioscrubber No. 1) is 55, 400 OUm^3/s. The combined odour emission rate for the two bio-scrubber stacks for Stage 2 of the expansion is 48, 529 OUm3/s, which is similar to the current licence limit for the existing bioscrubber stack.

Additional issues with air quality impact assessment
DECCW has identified additional issues with the air quality impact assessment that should be addressed (refer to Attachment 1B). These include revising the dispersion modelling to include the stable bedding as a source of odour and a more conservative estimate of capture efficiency of chicken manure stockpile odour emissions.

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[3] Technical framework: assessment and management of odour from stationary sources in NSW, November 2006.

Contingencies should be developed to address potential risk of offensive odour
Despite the AQIA predicting Stage 2 of the expansion compliance with DECCW's 2 OU criterion, there is some risk that the development will result in offensive odour impacts. This is due to some uncertainty regarding the efficiency of the bio-scrubber with the increased production of Phase 1 substrate. The AQIA has assumed the efficiency of the bio-scrubber will be maintained with the increased production of Phase 1 substrate.

Contingency measures should be developed as part of the proposed expansion to address possible future odour impacts. These possible future odour impacts could arise from lower than expected bio-scrubber performance, a change in surrounding land use or sensitive individuals. The development of contingencies as part of the proposed expansion would also demonstrate compliance with one of the key principles in the Odour Policy, the adoption of a risk management approach to odour impacts.

New Mushroom Farm, Londonderry

The AQIA predicts the proposed new mushroom farm at Londonderry will comply with an odour assessment criterion of 2 OU. The maximum predicted 99th percentile odour concentration at a sensitive receptor is 1 OU. DECCW has identified some minor issues with the AQIA that should be addressed (Attachment 1C).

RECOMMENDATION

DECCW recommends that the issues outlined in Attachment 1B and Attachment 1C should be addressed in the Submissions Report.

ATTACHMENT 1A – ASSESSMENT AGAINST ISSUES IDENTIFIED DURING ADEQUACY REVIEW OF SUBSTRATE PLANT AQIA

1. CALMET modelling methodology

The adequacy review identified that an 'observations only' approach was used in the draft air quality impact assessment (AQIA) to incorporate the observed and TAPM generated meteorological data in CALMET. Guidance from the developers of CALMET/CALPUFF regarding the preferred methodologies for running CALMET[4] identified a number of issues with the 'observations-only' CALMET modelling methodology. The draft AQIA also did not provide any information regarding the setting used in CALMET.

PAEHolmes (2010a) has revised the modelling to be consistent with the recommendations in TRC (2010). A 'hybrid mode' approach was used which incorporates measured hourly surface data in combination with a TAPM generated 3-D input field. The CALMET settings are also included in PAEHolmes (2010a) and they are generally consistent with the recommendations in TRC (2010).

2. Performance of CALMET

The draft AQIA did not include an analysis of the CALMET generated data which demonstrates it adequately describes the expected meteorological patterns at the site under investigation. An analysis of the CALMET generated data is included in the final AQIA which shows it generally describes the meteorological patterns at the site.

3. Exclusion of bale wetting area as a source of odour

The bale wetting area was excluded as a source of odour in the draft AQIA. There is currently one bale wetting area and a second bale wetting area is proposed to be constructed as part of the expansion. The final AQIA includes the existing and proposed bale wetting area as a source of odour at the site.

4. Bio-scrubber Odour Emission Rates

Bio-scrubber No. 1 currently processes air collected from the pre-wet shed and the Phase 1 tunnels. After the proposed development, bio-scrubber No. 1 will process air collected from the Phase 1 tunnels and the material storage shed and the additional bio-scrubber (No. 2) will be dedicated to treating air from the pre-wet processing area.

The adequacy review of the draft AQIA identified the following issues with the assumed odour emission rates for the bio-scrubbers:

- 2008 bio-scrubber odour stack testing data was excluded from the analysis;
- incorrect scaling of the average odour emission rate according to production of phase 1 substrate; and
- the assumption that the total site odour emissions in stage 2 and stage 3 will be distributed equally between the two bio-scrubbers is not supported by any other information in the Environmental Assessment (EA). It is clearly shown in the EA that in stage 2 and stage 3 bio-scrubber No. 1 will treat air from the phase 1 tunnels and bio-scrubber No. 2 will treat air from materials storage and pre-wet shed.

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[4] TRC, 2010 *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, Australia'*

The revised methodology to estimate the bio-scrubber odour emission rates in the final AQIA is generally adequate. The 2008 odour stack testing data were excluded from the analysis as they were considered to be too low in comparison to the other rounds of stack testing reviewed. The odour emission rate for bio-scrubber No. 1 has been correctly scaled according to the proposed increase in Phase 1 substrate production. Additionally, it has been assumed that the total emissions from the phase 1 tunnels will be treated by bio-scrubber No. 1.

The odour emission rate for bio-scrubber No. 2 has been estimated using the odour emission rate for the pre-wet building and the raw materials storage and assuming a bioscrubber efficiency of 75%. The assumed efficiency of bio-scrubber No. 2 is based on the efficiency of the existing bio-scrubber.

6. Peak to Mean Ratios

Peak to mean ratios are used in dispersion modelling to simulate the instantaneous perception of odours by the human nose. The 1 hour average dispersion modelling predictions are multiplied by the peak to mean ratios to result in an estimate of the instantaneous odour concentration. The peak to mean ratios vary according to source type and distance from the source (near field or far field).

The draft AQIA used the far field peak to mean ratios which are less than the near field peak to mean ratios. Far field peak to mean ratios were used to develop the odour emission limit for the existing bio-scrubber stack.

The adequacy review of the draft AQIA identified that the final AQIA should include a justification for the use of the far field peak to mean ratios when the nearest sensitive receptors appear to be located in the near field. The final AQIA has revised the assessment to include near field peak to mean ratios for the receptors located in the near field and far field peak to mean ratios for those receptors located in the far field. The near field zone is defined to be approximately a 400 metre radius around the facility.

A summary of predicted odour concentrations by peak to mean ratios is provided in Table 1. It can be seen in Table 1 that if far field peak to mean ratios are used, as was used in setting the odour emission limit for the existing bio-scrubber stack, Stage 2 of the proposed expansion would comply with DECCW's 2 OU odour assessment criteria. Using near field peak to mean ratios, the proposed expansion would exceed the 4 OU criterion as does the existing facility at one sensitive receptor. The appropriate odour performance criterion for receptors 7 to 11 according to the Odour Policy is 4 OU.

Table 1 99th percentile odour concentrations at the nearest sensitive receptors using near field and far field* surface point peak to mean ratios

Receptor ID	Stage 0		Stage 1		Stage 2		Stage 3	
	NF	FF	NF	FF	NF	FF	NF	FF
7	5	3	7	5	7	2	9	3
8	4	2	6	4	5	2	7	2
9	4	2	6	4	5	2	7	2
10	4	2	6	3	5	2	7	2
11	4	2	7	4	6	2	8	3

NF – Near Field
FF – Far Field
* Far field 99th percentile odour concentrations estimated from contour plots presented in Appendix C

An additional issue is the type of peak to mean ratios applied to the bio-scrubber stacks. There are peak to mean ratios for the following source types: area, volume, wake affected stack, surface point and tall wake free point. The final AQIA has used surface point peak to mean ratios. According to Katestone (1998)[5], the bioscrubber stacks could be classified as tall stacks as they are greater than 30 m in height. The use of surface point peak to mean ratios, in comparison to the use of tall stack peak to mean ratios, results in odour impact assessment results that are more conservative in the far field and less conservative in the near field.

PAEHolmes (2010a) presents a discussion supporting the use of surface point peak to mean ratios. Reference is made to guidance in Katestone (1995) that a tall stack typically has a height greater than 50 metres and that the tall stack peak to mean ratios were developed from stacks greater than 100 metres. Further it is noted that the height of the bioscrubber stacks is at the transition point between a surface point and a tall stack and the use of tall stack peak to mean ratios could be an over-estimate.

DECCW considers overall there is some uncertainty regarding the appropriate peak to mean ratios for the two bio-scrubber stacks. However, surface point peak to mean ratios is likely to provide a reasonable prediction of odour impacts.

[5] Katestone (1998)

ATTACHMENT 1B – ADDITIONAL ISSUES WITH SUBSTRATE PLANT AQIA

1. Odour sources included in the modelling

The stable bedding stockpile has not been included as a source of odour in the assessment. The stable bedding stockpile is an open fugitive source of odour located between the materials storage shed and the pre-wet shed. The stable bedding was verified as the cause of an odour complaint from a nearby resident on 18 January, 2011.

The proposed expansion of the substrate plant does not include any changes to the storage of stable bedding. DECCW does not consider storage of stable bedding in the open is best practice for prevention or minimisation of odour. The *'Technical framework: assessment and management of odour from stationary sources in NSW'* (the Odour Policy) requires new or modified activities to incorporate all best practicable means to prevent or minimise odour.

DECCW recommends the modelling is revised to include the stable bedding as a source of odour at the site. Further, DECCW recommends the proponent reconsiders the stable bedding storage area in the context of the Odour Policy requiring modified activities to incorporate all best practicable means to prevent or minimise odour.

2. Fugitive emissions from chicken manure stockpile

The chicken manure stockpile is stored in the raw materials storage shed which is a three sided roofed shed. An air duct will be installed during stage 2 of the project connecting the roof space of the existing raw materials storage to a nearby building connected to a bio-scrubber.

The AQIA has assumed there will be no fugitive emissions from the chicken manure stockpile as all odorous emissions from the chicken manure will be captured by the air duct above the stockpile. However, the raw material shed is not fully enclosed as it is three-sided. It is therefore likely that the air duct will not fully capture the odorous emissions from the chicken manure stockpile and there will be fugitive emissions.

DECCW recommends a more conservative estimate of capture efficiency of chicken manure stockpile odour emissions is included in the modelling. Further, DECCW recommends the proponent reconsiders the raw material storage area in the context of the Odour Policy requiring modified activities to incorporate all best practicable means to prevent or minimise odour.

3. Efficiency of bio-scrubbers

The AQIA has estimated the odour emission rate for bio-scrubber No. 1 by scaling the bio-scrubber No. 1 odour emission rate according to Phase 1 substrate production. This assumes the efficiency of bio-scrubber No. 1 will be maintained with the increased production of Phase 1 substrate. There is some uncertainty whether bio-scrubber No. 1 will achieve the same efficiency with the increased production of Phase 1 substrate.

DECCW recommends the proponent is requested to provide additional information demonstrating the existing efficiency of bio-scrubber No. 1 will be maintained with the increase in production of Phase 1 substrate.

4. Contingencies in case of land use change or sensitive individuals

One of the key principles adopted in the Odour Policy is that operators of all developments should adopt a risk management approach to odour impacts. As land use is dynamic, existing activities must be prepared to undertake measures to minimise their odour impacts if conflicts arise. Contingencies for possible future land-use changes or sensitive individuals should be built in at the project planning stage. It is also highlighted in the Odour Policy that the operator of an activity that

emits odour is ultimately responsible for managing and minimising any impacts of the operation beyond its boundary.

DECCW considers it is prudent that the proponent develops, as part of the proposed expansion, contingency measures should odour impacts arise in the future.

ATTACHMENT 1C – ISSUES WITH MUSHROOM FARM AQIA

1. Emissions performance of plant and equipment

The fixed plant to be installed at the mushroom farm includes steam boilers, hot water boiler and steam generator. The AQIA does not discuss the emissions performance of these plant and equipment. All plant and equipment will need to comply with the relevant requirements in Part 5 of the Protection of the Environment Operations (Clean Air) Regulation 2010.

DECCW recommends the proponent is requested to demonstrate all plant and equipment on the mushroom farm will comply with the relevant requirements in *Part 5 of the Protection of the Environment Operations (Clean Air) Regulation 2010.*

2. Odour emissions from Sewage Treatment Plant

The design of the on-site sewage treatment plant (STP) is yet to be finalised. The AQIA assumed the design of the plant will be similar to the design of the Pitt Town Recycled Water Factory (the Factory). PAEHolmes previously conducted an odour impact assessment for the Factory where the sources of odour are three pumps. The AQIA assumed odorous emissions from the STP at the Londonderry Mushroom Farm will be restricted to emissions from three pumps. It was assumed there would be no treatment ponds at the on-site STP.

An AQIA should be based on the final detailed design of any proposed plant and equipment. The predicted odour impact of the STP will change should the final design of the STP at the Mushroom Farm be significantly different from that assumed in the AQIA. In particular, the odour impact of the STP is likely to change significantly should the final design include treatment ponds.

DECCW recommends the proponent is requested to revise the AQIA based on the final design of the on-site sewage treatment plant.

3. Processing of spent substrate

The spent mushroom substrate will be processed on site into a fine grained organic material suitable for top dressing for turfed sporting fields. The EA states: *"Each day spent substrate will be transported the short distance from a growing room to the spent substrate store where it will be added to other material previously laid out in windrows".* Specific information on the 'other material' is not provided in the EA.

DECCW recommends the proponent is requested to detail the other material that will be used to produce top dressing for lawns.

ATTACHMENT 2: ABORIGINAL CULTURAL HERITAGE ISSUES

The report *Tolson's Mushroom Farm and Substrate Plant Project: Cultural Heritage Assessment. Report for Perram and Partners on behalf of the Tolson Group* April 2209 prepared by Biosis Research Pty Ltd has been reviewed by the Department of the Environment and Climate Change (DECCW).

The following information which is a requisite of the assessment process has either not been included in the report or requires clarification. DECCW does not support the findings of the report and recommends that the report be revised to include the following information and where necessary, clarifications, prior to finalisation of DoP's decision:

The following information should be included:

1. The report makes reference to Figures 1 and 2 which show the location and extent of the study area. Figure 2 is missing.
2. Figure 2a and 2b which were intended to show the location of identified sites within the proximity of both development sites have been removed at the request of DoP. Both figures are necessary to assist DECCW in its' assessment of the potential for Aboriginal objects to occur in the proposed development areas.
3. A map clearly indicating landforms such as major creek lines, drainage lines, dams, hillslopes, ridgelines and existing infrastructure all of which are referred to in the report should be included in the report.
4. The predictive model suggests that potential archaeological deposits (PADs) are likely to occur close to water courses and on ridgelines where previous disturbance has been minimal. The report fails to identify and provide a map indicating where these areas are likely to occur within the development areas.
5. The percentage of land covered by the survey at both locations has not been included in the report nor has the estimated percentage of surface exposure and visibility been included. While the report indicates that extra time was spent surveying areas around dams, Figure3a suggests that this is not the case. It is also unclear how the survey was conducted and the distance between team members is not documented. If as is stated the survey at the proposed mushroom farm was conducted using transects, information on each transect and the results of each transect should be included in the report.
6. All disturbances identified during both surveys should be mapped to better understand the extent of the claimed impacts to both development areas.
7. The land use history makes reference to a road reserve, the location of which should also be mapped.
8. The Significance Assessment (pages 27-30) contains no reference to the sites that the report states were identified during the survey (pages 24 and 25).
9. Recommendation 1 should be expanded to include what actions will be taken after the necessary notifications if an Aboriginal object is identified during excavation and construction.

The following requires clarification:

1. While the report states that there is a high level of ground disturbance, there is no supporting evidence to justify this statement. The land use history for the proposed mushroom farm (pages 12 and 13) makes reference to a road reserve, the location of which in not shown and it would appear that this component of the report does not relate to the land under consideration, but rather relates to another survey.
2. Section 5.3.2 Effective Survey Coverage appears to require revision as it concludes that (page 24) "Aboriginal sites, which were identified during the field survey, were identified in areas of exposure on upper slopes and in close proximity to major creek lines."
   This appears to contradict the statement that no sites were identified during the surveys which is further contradicted (page 25) with the statement that two scarred trees were identified and that the predominant raw material recorded included silcrete although a number of other materials (chert, mudstone and quartz) were present .
3. Recommendation 2 makes reference to the amendment of an Aboriginal Heritage Plan should human remains be discovered, yet the report makes no other reference to an existing Aboriginal Heritage Plan.
4. All topsoil has been removed from the Substrate plant site (page 23) yet the report also states (page 3) that the surface on which the existing substrate plant is located has been filled to a level of 16 metres AHD in order to raise it above the 100 in a hundred year flood level. This requires clarification.

Aboriginal Community Consultation:

The following information has not been provided in the report to support the Community consultation component of the Cultural Heritage assessment, which DECCW recommends should be considered prior to finalisation of DoP's decision:

- A copy of the advertisement placed in local media outlets notifying Aboriginal stakeholders of the project.
- The date that the advertisement was placed.
- A log of all actions in relation to community consultation including letters sent and received from all relevant stakeholders and authorities, telephone calls etc.
- Copies of all relevant correspondence.

Evidence of the involvement of relevant Aboriginal stakeholders in the assessment process has not been included in the report and it would appear that consultation with Aboriginal stakeholders was limited to the Deerubbin Local Aboriginal Land Council which is at odds with the consultation requirements as set out in the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation referenced in the GDRs. As a consequence of this, DECCW considers that the cultural assessment is incomplete as the registered Aboriginal community groups have not been provided with an opportunity to contribute to the cultural assessment or to provide input into the development of any cultural heritage management options should they arise.

DECCW recommends that Aboriginal stakeholders be provided the opportunity to contribute to the cultural assessment and that their input be considered prior to finalisation of DoP's decision.

ATTACHMENT 3: WASTEWATER MANAGEMENT ISSUES

Overall Comments

DECCW has reviewed the wastewater management proposals in the document *ELF Mushrooms and ELF Farm Supplies Mushroom Industry Expansion in Western Sydney Environmental Assessment Volume 1 and Volume 2 by Perram and Partners* ("the Environmental Assessment").

The Environmental Assessment contains proposed arrangements for both the mushroom plant (which is to be a new plant) and the substrate plant (which is an existing licensed plant to be expanded).

The Environmental Assessment indicates that a low strength organic- and nutrient rich- wastewater stream will be produced at both plants in small volumes. The wastewater is mainly comprised of washdown water from processing areas. The Environmental Assessment indicates that adequate treatment capability can be utilised at both sites to contain and reuse treated wastewater on-site. Appropriate measures are also proposed for managing sewage effluent at each site: at the substrate plant the effluent will continue to be discharged to Sydney Water's sewer under an existing Trade Waste Agreement, and at the mushroom plant sewage effluent will be treated in an on-site package treatment plant and irrigated using sub-surface irrigation.

New Mushroom Farm, Londonderry

There will be two main wastewater streams at the mushroom plant: a process wastewater stream and a sewage effluent stream from site buildings. The estimated average volumes are 30,000 litres and 12,000 litres per day, respectively. These are small volumes – in total, about the volume of one large tanker.

The process wastewater stream is mainly washdown water from the growing rooms and other areas where mushrooms and substrate are handled. Sewage effluent will be produced from the staff amenities building, workshop and the child care centre.

The process wastewater stream will be a low strength organic and nutrient rich wastewater. According to the Environmental Assessment, the predicted character of this stream, based on monitoring at another similar plant, is: ammonia 7.6-26 mg/l, BOD 38-68 mg/l, phosphorus 8.1-18 mg/l, and TKN 21-96 mg/l.

It is proposed to treat the process wastewater in ponds and wetlands. The treated wastewater will be used on-site for non-potable uses such as toilet flushing, in cooling towers, steam generation and irrigating the grounds. No off-site discharge is proposed.

DECCW's concerns regarding polluted water impacts off site on adjacent vegetation are addressed in the letter from T W Perram and Partners Pty Ltd dated 21 January 2011 (Ref: 119/121L12). The soil mounds appear to have sufficient capacity to accept the expected effluent.

The Environmental Assessment does not cite any water quality standards for the beneficial reuse options. Given the mid-low strength of the wastewater, it should be able to be treated to a standard suitable for the proposed reuses.

Guidance on appropriate beneficial reuse standards should be obtained from Interim NSW Guidelines for Management of Private Recycled Water Schemes, Department of Water and Energy, May 2008. Recommended effluent quality standards are contained in Table 7.1 and 7.2 of those guidelines.

It is proposed to treat the sewage effluent in a package treatment plant offering secondary treatment and to irrigate it on-site using subsurface irrigation techniques. Modern package sewage treatment plants can produce a high quality effluent suitable for irrigation.

During the detailed design of the system, guidance may be obtained from the above guidelines and from Environmental Guidelines: Use of Effluent by Irrigation (DEC 2004).

Expansion of Substrate Plant

The wastewater streams from the substrate plant are a process wastewater stream (mainly washdown water) and a sewage effluent stream from the workshop and staff amenities. The proposed upgrade of the plant will not create new wastewater streams, but it will increase the volume of these existing streams by an unspecified but probably small amount.

The sewage effluent is currently discharged to Sydney Water sewer. It is proposed to continue this arrangement when the plant is expanded.

The process wastewater is currently reused in substrate production and no process wastewater is discharged off-site. This arrangement is proposed to continue when the plant is expanded. The licence for the substrate plant does not have a licensed discharge point and none is sought in the current proposal.

The treatment mechanism appears to be use of first flush pits; the captured first flush is put back into the process whilst the bypass water is stored in a dam. The nutrients in the wastewater are said to be beneficial for substrate production.

The increased volumes of wastewater do not appear to be quantified in the Environmental Assessment, however new 'recycle water pits' will be installed to serve additional runoff from new buildings which appears adequate.

ATTACHMENT 4: RECOMMENDED NOISE LIMITS

MUSHROOM GROWING FACILITY - LONDONDERRY

Operating Conditions

1.
Noise generated by the operation of the Mushroom Growing Facility must not exceed the noise limits presented in the tables below. (Note that the noise limits apply to the noise contribution from the Mushroom Growing Facility).

Noise limits dB(A)
Mushroom Growing facility Operation

Receiver Location	Shoulder Period $L_{Aeq(15\ minute)}$	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	Sleep Disturbance L_{Amax}
R1 493 - The Northern Road	44	35	35	35	48
R2 509 - The Northern Road	40	35	35	35	48
R3 1 Thomas Road	44	44	37	37	48
R4 8-16 Timothy Road	36	39	35	35	48

Note. The presented noise limits reflect the predicted noise levels in Noise Impact Assessment Report 40:6411.R2:CFCD4.

2.
For the purpose of Condition 1.:

a) Shoulder Period is defined as the period from 5am to 7am Monday to Saturday and 5am to 8am Sundays and Public Holidays.

b) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays.

c) Evening is defined as the period from 6pm to 10pm.

d) Night is defined as the period from 10pm to 5am.

3.
The noise limits set out in Condition 1. apply under all meteorological conditions except for any one of the following:

a) Any wind speed greater than 3 metres/second at 10 metres above ground level.

4.
To determine compliance:

a) with the $L_{eq(15\ minute)}$ noise limits in Condition 1. the noise monitoring equipment must be located:

(i) within 30 metres of a dwelling façade where any dwelling on the property is situated more than 30 metres from the property boundary that is closest to the premises;
(ii) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises;
(iii) within approximately 50 metres of the boundary of a National Park or a Nature Reserve.

b) the noise monitoring equipment must be located in a position that is:

(i) at the most affected point at a location where there is dwelling at the location; or
(ii) at the most affected point within an area at a location prescribed by conditions 4. a).

5.
An exceedance will still occur where noise generated from the premises in excess of the appropriate limit specified in the Condition 1. is detected:

a) in an area at a location other than an area prescribed by condition 4. and/or

b) at a point other than the most affected point at a location.

6.
For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Compliance Assessment Condition

7.
To determine compliance with Condition 1. attended noise monitoring must be undertaken in accordance with Conditions 4. and 5.

a) at each one of the locations listed in Condition 1.

b) within 3 months of commencement of commercial mushroom production at the facility

c) during each of a day, evening and night-time period as defined in the NSW Industrial Noise Policy for a minimum of:

(i) 1.5 hours during the day;
(ii) 30 minutes during the evening; and
(iii) 1 hour during the night.

The results are to be documented, together with a statement as to whether noise emissions from the premises comply with the limits, and kept on the premises.

Construction Noise Condition

8.
Prior to commencement of works, the Proponent shall prepare a Noise and Vibration Management Plan covering all activities consistent with the guidelines contained in the Interim Construction Noise Guidelines (DECCW 2009) to detail how noise and vibration impacts would be minimised and effectively managed. The Plan shall include but not necessarily be limited to:

a) the appropriate noise and vibration objectives for each identified noise sensitive receiver.

b) details of activities and a schedule of works;

c) identification of activities that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential receivers;

d) assessment of potential noise impacts from the proposed work methods including noise from vehicles and noise impacts from required traffic diversions;

e) include noise and vibration from ancillary activities such as site yards, plant compounds, batch plants and crushing plants;

f) works timetabling, in particular works outside standard hours, to minimise noise impacts

g) justification for any activities outside standard construction hours

h) examination of all feasible and reasonable noise mitigation measures including the use of alternative methods where potential noise impacts exceeds the relevant objectives;

i) reiteration of the commitments made in the Statement of Commitments in the EA, and where there is additional detail on these in the NMP;

j) a detailed description of what actions and mitigation measured would be implemented to ensure that these works would comply with the relevant noise and vibration criteria/ guidelines;

k) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often monitoring would be conducted, how the results of the monitoring would be recorded, and, if any non-compliance is detected;

l) procedures to notify residents of activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints;

m) site contact person and appropriate telephone number; and

n) description and commitment to work practices which minimise noise; and management and mitigation measures which minimise impact.

MUSHROOM SUBSTRATE PLANT – MULGRAVE

Operating Conditions

1.
DECCW advises no change to existing noise limits for the premises as specified by Environment Protection Licence (EPL) 6229.

Compliance Assessment Condition

2.
To determine compliance with the noise limits on EPL 6229 attended noise monitoring must be undertaken:

a) at the location(s) specified in EPL 6229.

b) within 3 months of completion of construction and commissioning of the proposed works

c) during each of a day, evening and night-time period as defined in the NSW Industrial Noise Policy for a minimum of:

(i) 1.5 hours during the day;
(ii) 30 minutes during the evening; and
(iii) 1 hour during the night.

The results are to be documented, together with a statement as to whether noise emissions from the premises comply with the limits, and kept on the premises.

Construction Noise Condition

3.
Prior to commencement of works, the Proponent shall prepare a Noise and Vibration Management Plan covering all activities consistent with the guidelines contained in the Interim Construction Noise Guidelines (DECCW 2009) to detail how noise and vibration impacts would be minimised and effectively managed. The Plan shall include but not necessarily be limited to:

a) the appropriate noise and vibration objectives for each identified noise sensitive receiver.

b) details of activities and a schedule of works;

c) identification of activities that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential receivers;

d) assessment of potential noise impacts from the proposed work methods including noise from vehicles and noise impacts from required traffic diversions;

e) include noise and vibration from ancillary activities such as site yards, plant compounds, batch plants and crushing plants;

f) works timetabling, in particular works outside standard hours, to minimise noise impacts

g) justification for any activities outside standard construction hours

h) examination of all feasible and reasonable noise mitigation measures including the use of alternative methods where potential noise impacts exceeds the relevant objectives;

i) reiteration of the commitments made in the Statement of Commitments in the EA, and where there is additional detail on these in the NMP;

j) a detailed description of what actions and mitigation measured would be implemented to ensure that these works would comply with the relevant noise and vibration criteria/ guidelines;

k) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often monitoring would be conducted, how the results of the monitoring would be recorded, and, if any non-compliance is detected;

l) procedures to notify residents of activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints;

m) site contact person and appropriate telephone number; and

n) description and commitment to work practices which minimise noise; and management and mitigation measures which minimise impact.