RE: Review of Modification Application to the Mushroom Farm at 521 The Northern Road, Londonderry, MP 08_0225

I have reviewed the information provide4d for the proposed modifications to the mushroom farm at 521 the Northern Road, Londonderry and provide the following comments:

Proposed Modifications: The proposed modifications are to the size and layout of the building structures, modifications to stormwater and increase in dam capacity from 14.7ML to 16ML, landscaping and access road and increase parking capacity and an increase in imported fill material. The proposal does not include an increase in the production capacity. The structures include a main building, compost storage area (staged), workshop, & peat storage area.

Proposed Modification to Conditions:

The proposed modifications are to condition 16 (noise) and to Appendix 1 – statement of commitments. I note that conditions specifically relating to the installation of an onsite sewage management system could not be located within the original approval.

Noise Impacts – Atkins Acoustics, revised 28/08/2018

The changes to condition 16 propose to adhere to Tables 7-10 in the acoustic report, omitting compliance with Table 5 as originally required.

Effluent Management, Harris Environmental Consulting (dated 15/03/2018, ref 2771WW)

Summative Review of Effluent Management:

There are significant proposed changes to the approved sewage treatment plant and disposal method which are **unsatisfactory**.

The original assessment prepared by Blue Mountain Geological and Environmental Services (dated June 2010, Reference No. 100305) proposed to install a commercial sewage treatment plant which disposed of effluent by subsurface irrigation within the vegetated acoustic mounds. The hydraulic loading was overestimated and consequently overestimated the minimum size required for the effluent disposal area. The setback distances to sensitive receivers and method of effluent disposal were considered satisfactory. Insufficient detail was provided on the sewage treatment plant and maintenance requirements.

The new waste water report prepared by Harris Environmental Consulting has underestimated the hydraulic load without justification and has thereby underestimated the size of the effluent disposal area.

I provided justification for wastewater allowance, based on what I was told by the client. See attached. I have allowed average of 26L/person. These workers are only using the toilets. Only a 6 will have showers.

The determination of the size of the effluent disposal area via a phosphorous balance was not justified with supporting data and calculations and has been grossly undersized. **We forgot to attach the phosphorus balance. The required area is 3050m2.** An undersized effluent disposal are will result in premature failure and additional expense for the applicant. **This is why we provided 100% reserve.**

It is noted that the original approval for the development does not contain any conditions relating to the installation and operation of the proposed onsite sewage management system.

Detailed review of effluent management:

Source	Hydraulic flow rate (litres)	Litres/day (PCC)	Litres/day (BMG)	Litres/day (HEC)
Farm (113 staff)	50	5650	8220	
3 bedroom dwelling (4EP)	150	600	725	
Day-care centre (6 staff & 25 Children)	40	1240	2000	
TOTAL		**7490**	**12000**	**4097**

Table showing the estimated waste water loadings for the system as determined by both consultants and Penrith City Council. Legend: PCC, Penrith City Council; BMG, Blue Mountains Geological & Environmental Services; HEC, Harris Environmental Consulting Services.

The Hydraulic loading: Maximum staff capacity is being reduced from 165 to 113. The number of staff will gradually increase with each stage of development. As shown above the hydraulic loading has not been justified by Harris Environmental Consulting and is grossly underestimated. **Does Council think there will be more than 113 people?**

The soil profile is relatively consistent between consultants being Berkshire Park soil group consisting of sandy clay loam and medium clay. The most limiting soil profile is category 6, medium clay with a DIR of 2mm/day. This contradicts the current consultant's recommendation of 3mm/day. **I found a gravelly sandy clay loam not a medium clay. This is consistent with the soil landscape description.**

	Water balance	Nitrogen balance	Phosphorous balance	**Minimum required Area (m^2)**
PCC	4695	5674	**6092**	**6092**
BMG	**5608**	Not conducted	Not conducted	**5608**
HMC	1400	**3120**	3050	**3120**

Table showing the estimated size of the effluent disposal area using three methods: 1) water balance,2) nitrogen and 3) phosphorus balances. The largest size of the 3 methods is selected for the minimum effluent disposal area. Legend: PCC, Penrith City Council; BMG, Blue Mountains Geological & Environmental Services; HEC, Harris Environmental Consulting Services.

The previous consultant, Blue Mountains Geological & Environmental Services used unorthodox methodology to determine the size of the effluent disposal area and overestimated the minimum area required for subsurface irrigation. The new consultant, Harris Environmental Consulting, has

not provided any supporting information for how the size was derived using a phosphorous balance. It is grossly undersized. **I don't believe this to be the case as we have used the same spreadsheet we have previously used for sites in PCC. The proposed irrigation area is 3120m2, but there is 100% reserve so available area is 6240m2.**

Councils Recommendations for Effluent Management:

Council recommends the following:

- The applicant is to submit a separate development application with Penrith City Council for the installation of an onsite sewage management system under section 68 of the Local Government Act. The application is to contain an amended waste water report which justifies the hydraulic loading and phosphorous balance. It is to provide details on the proposed sewage treatment plant to be installed including the system specifications and maintenance details.

Alternatively, the following conditions are recommended for inclusion in the modification approval should consent be granted:

- The applicant is to apply for an Approval to Operate as required by section 68 of the Local Government Act to operate the onsite sewage management system.
- A detailed monitoring and maintenance plan and specifications for the proposed sewage treatment plant is provided to Council for approval as part of the Approval to Operate application.

- AS/NZS 3500 Plumbing and Drainage 2015 (Standards Australia, 2012)

An earlier soil and site assessment was prepared by Blue Mountains Geological and Environmental Services, June 2010. The BMGES report was prepared for an earlier proposal and many aspects have since been changed. However, the soils information was reviewed and found to be consistent with what this assessment has found.

4. DESIGN WASTEWATER LOAD

The design wastewater load was calculated using the recommended rates of wastewater flows from NSW Health (2001). Only 6 of the workers will have access to showers and laundry. All workers will have access to a kitchenette. This assessment estimates kitchen wastewater from washing cups would be 200L /day.

The business will operate with employees on a full time basis:

Monday to Friday, 7am — 6pm;

Saturday, 7am — 1pm; and

Sundays and public holidays, construction prohibited,

The business will require113 workers at full capacity:

Stage 1: 40 workers

Stage 2: 83 workers

Stage 3: 83 workers

Stage 4: 88 workers

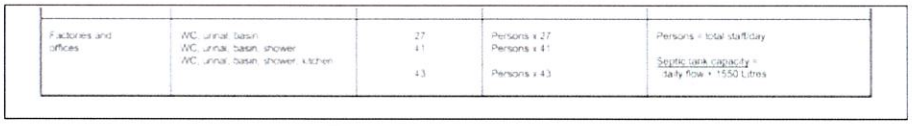
Stage 5: 103 workers

Stage 6 (at full capacity): 113 workers.

TABLE 1 DESIGN FLOW RATES

Wastewater design load and daily wastewater (L/day) at **full capacity**	**107** pickers, with access to WC, urinal and basin	27L/p x 107 = 2,889L
	Additional allowance for kitchen use	200L/d
	6 workers with additional access to shower and laundry	43L/p x 6 = 258L
	Total wastewater load = 2,807L/d	
Cottage	3 bedrooms x 5 persons x 150L/d = 750L	
Total wastewater	**4097L/d**	

FIGURE 2 EXTRACT FROM NSW HEALTH (2001)



Factories and offices	WC, urinal, basin WC, urinal, basin, shower WC, urinal, basin, shower, kitchen	27 41 43	Persons x 27 Persons x 41 Persons x 43	Persons = total staff/day Septic tank capacity = daily flow + 1550 Litres

5. SITE ASSESSMENT

PHOSPHORUS BALANCE

SITE ADDRESS	**521 The Northern Road, Londonderry**		
Daily hydraulic load	4097	L/day	
TP effluent conc	12	mg/L	
TP effluent conc per day	49164	mg/day	
	17944.86	g/year	
P sorption rate of soil	300	mg/kg	(300mg/kg/1000000)*(1.5g/cm3*1000)*(1m) → 0.39 mg/m2
Bulk density of soil	1.3	g/cm3	**3900 kg/ha**
	1300	kg/m3	(0.39*10000)
Land application area	**3050.0**	**m2**	
Soil depth	0.6	m	
Volume of soil	1830.000	m3	
Mass of soil	2379000	kg	
Total P sorption capacity	713700	g	
Vegetation	Grass		
P annual uptake by vegetation	12	kg/ha/yr	3.3707865 mg/m2/day
	3660	g/yr	(12kg/ha/yr*1000000)/10000/356
Net annual P (in soil)	14285	g/yr	
Life of system	50.0	years	