

MEMORANDUM

To: Joanna Gilroy, Consents Officer
Environment Southland

From: Rob Potts

Date: 17 March 2016

Subject: Matters Addressed via Mitchell Partnership s92 Response 17 February

Dear Jo

This memo assesses the Mitchell Partnership s92 response letter of 17 February against the LEI Memos of 20 August 2015, 22 January 2016 and 19 February 2016. The s92 response has mainly been provided to address the issues raised in the LEI memo of 22 January 2016.

As the information being received from the Alliance Consultants is out of sync with the technical review being undertaken by LEI, we have labelled the information presented in the Mitchell Partnership's 17 February letter with Issue Numbers (see attached Mitchell Partnership's Letter, Issues 1 - 25). This memo is focussed on outlining whether response has clarified matters sought from the earlier memos and whether it has filled in gaps from our 19 February Memo and what else is required. The narrative below addresses the s92 response to the LEI January Memo and the table below that outlines other areas that have been identified in the LEI February Memo that require clarification via a s92 request. Other matters identified in the LEI February Memo will be used in the s42a analysis.

A. ORETI RIVER INTAKE

Issues' #1 – #11. The water take is not one of the components of the proposed activity reviewed by LEI.

B. DISCHARGE OF WASTEWATER TO WATER AND TO LAND

This includes information from PDP and SoilWork.

Issue #12: *We have some concerns regarding the aeration of the Loop part of the treatment system. Is this system lined/sealed. It appears to be only 1.2 m deep. What is happening to the lining/sealing at the aerators?*

S92 Response: It is not known if the lagoon bed was re-compacted after desludging. It is not lined. Groundwater results indicate there is no significant impact on groundwater quality from pond leakage.

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What next: See LEI Memo comments on Appendix Q. Clarification is sought as to groundwater direction at the ponds and further assessment of pond leakage as we do not believe pond leakage is being intercepted by the current piezometers.

Issue #13: *Further discussion of the suction cup sampler results is needed to critically evaluate the results provided. The use of suction cup samplers for determining nitrogen leaching typically requires multiple replicates for each treatment (control and irrigated) since only a small soil volume is sampled, and since the sampled volume may not include macropore flow (most likely to contain leached nutrients). The sampling design may result in a risk of underestimation of leached mass and this should be addressed for future monitoring recommendations. The report suggests lateral flow has influenced the suction cup results which may also indicate issues with the sampling design.*

S92 Response: Attachment B. There are replicates, with 18 lysimeters in total.

What next: Response accepted and no further information required.

Issue #14: *Table 1 in the report shows both BHB and BHD are screened deeper than the top of the groundwater and therefore may not be intercepting any contaminant plume should there be stratification occurring. However, the driller's log for BHD shows the screen above the water table.*

S92 Response: BHB screen is below the upper water level. BDD water level fluctuates with tidal movement. Contaminants expected to flow through the more permeable material, which is within the screen.

What next: Response accepted and no further information required.

Issue #15: *The report says that groundwater is flowing in a general west to south westerly direction. However, both piezometric contour maps show groundwater direction in the vicinity of the wastewater ponds is to the northwest. It therefore cannot be concluded that the monitoring bores are downgradient of the ponds, with the Makarewa River being directly downgradient.*

S92 Response: Ultimately it is expected that any pond seepage will enter the Makarewa River. Wastewater pond levels are higher than surrounding groundwater levels. Consequently, there is a hydraulic gradient from the ponds to groundwater.

What next: Response partially accepted. It cannot be categorically stated that the ponds are not leaking as there are no downgradient bores (to the NW of the ponds). We accept there is a hydraulic gradient from the ponds but this will be significantly steeper to the NW, where most leakage is likely to travel. We are not sure how critical understanding the quantity and quality of the leakage is, as it all ends up in the Makarewa River and this is to be monitored. If the bores are being relied on to prove the ponds are not leaking and can be used for future wastewater treatment without further investigation as to their integrity, then further evidence is required.



Issue #16: This is regarding water quality and not covered by LEI. However, we did state the following in our February Memo (table below). We also had a number of comments on the timeframe for upgrade of the WWTP to reduce microbiological contaminants. We will leave these issues to the ES Water Quality staff.

Discharge to water	These limits are lower than both the ANZECC (2000) 80% trigger value and the USEPA (2013) chronic criteria, and only slightly higher than the Freshwater NPS attribute state, which was set to provide 80% species protection. Due to the unsuitable nature of the habitat within the Makarewa River, most sensitive species are not commonly found, if at all, below the mixing zone, and thus the site-specific value is considered an appropriate limit for this river.	Being able to undertake a higher level of wastewater treatment is not considered technically un-feasible or economically impractical for the applicant.	Clarification will be sought via a s92 request
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C. DISCHARGE OF BIOSOLIDS AND MONOFILL

Issue #17: *The WAS and SYS are said to meet the 2003 Biosolid Guidelines. There is no description as to how this will occur, i.e. stabilised for one year, heat treated, etc. It is apparent the WAS will be delivered to the monofill without further treatment from the WWTP and therefore cannot be classified as a biosolid. If the WAS is to receive further treatment to meet biosolid guidelines, then this needs to be provided in the report. There is no description of any treatment applied to the WAS or SYS given other than dewatering.*

S92 Response: No further treatment is proposed unless objectionable odour, then lime will be added to the surface of the monofill. Lime will also be added to the WAS at the time of land application if odour is an issue. No additional treatment is proposed for the SYS.

What next: The applicant needs to refrain from using the term Biosolids and treatment of the WAS and SYS as this can be interpreted as a stabilised material.

Issue #18: *Appendices J and S outline expected characteristics based on results achieved within a similar Alliance meat processing site (Alliance Pukeuri) or based on literature. No description is given as how these results are achieved.*

S92 Response: The Pukeuri sludge was a one-off grab sample at 2% solids. SYS characteristics are based on literature values.

What next: Response is acceptable. Consent conditions require the monitoring of both products before land application to confirm assumptions and the input into conditions will evolve through the process.

Issue #19: *The assessment of leakage does not give confidence regarding the leakage from A1 – B2. As the ponds are disused, the integrity of the naturally formed liner cannot be guaranteed.*

S92 Response: The integrity check of the clay liner will be undertaken to ensure 300 mm thickness. Further remedial works will be undertaken to ensure a seal is maintained prior to use. No leak detection is proposed. Leachate will be collected in a sump.

What next: Response is acceptable. A consent condition is required to ensure this occurs.



Issue #20: *Material characterisation – is there likely to be any source of mercury or organics as given in the Guidelines, Table 4.2 in the Alliance Lorneville biosolids? In the absence of pathogen analysis (Table 4.1 of the guidelines) can some information be supplied about risk of pathogen contamination and mitigation measures? Are there any pathogens which are not included in the Guidelines which are specific to the waste-stream, especially considering the waste is from the same type of animals that will graze the biosolids amended pasture? There has been, for example, attention paid by ES to Salmonella in the context of other meatworks effluent sludge land applications, but this matter has not been addressed here.*

S92 Response: There are no intentional sources of mercury but there may be some in the coal feedstock. This is expected to be lost in exhaust gases. Trace amounts may also be in the hydrated lime used at the fellmongery. Organics are also expected to be low. Salmonella is not expected in the wastewater as it is treated via anaerobic and aerobic processes although may be present in the SYS if infected animals are slaughtered.

Further analysis of Pukeuri WAS sludge and SYS at Lorneville are being undertaken and results will be provided about the end of February 2016.

What next: Response is acceptable. A review of the further information will be required.

Issue #21: *What volume/mass of material do they expect annually to apply to the application site? What area will be needed annually, and what return interval will there be for repeat applications?*

S92 Response: This was covered in their later reports submitted with the AEE. Further clarification in the response is 250 kg TN/ha/yr or 140 kg PAN/ha/yr which equates to 23 t/ha/yr at 18% DS, applied in a minimum of 2 applications/year.

D. DISCHARGE TO AIR

Issue #22: *A description of the sensitivity of the receiving environment, primarily the rural land immediately east of the discharge that is affected by the highest PM₁₀ and SO₂ concentrations (exceeding guidelines). What is the potential for the use of this land to change?*

S92 Response: The land directly to the east of the Plant is zoned for rural purposes in accordance with the Southland District Plan. The Southland District Plan has recently gone through a public review, notification and hearing process and this land zoning was unchallenged by either the existing land owner or adjacent parties (i.e. Alliance Group Limited).

Most of the provisions relating to the rural zone are now operative, and given that the Plan has only recently gone through substantial change it is reasonable to presume that this rural zoning will remain for the foreseeable future (at least 10 years until the next District Plan review).



The primary purpose of the rural zone is for farming purposes. One principal dwelling per allotment is permitted in the rural zone, with additional dwellings permitted depending on the size of each allotment for the use of staff. Residential dwellings already exist on the properties that are immediately adjacent to the Lorneville Plant (refer Figure 4 of Appendix M of the AEE). The permitted activity rules also require that any dwelling is setback at least 150m from the property boundary of any adjacent wastewater treatment plant.

Any further development of residential or other sensitive type land use activities would therefore trigger a consenting obligation under the Southland District Plan.

It is therefore unlikely that any further intensification of residential development or other sensitive land uses will occur on these sites. In addition, it is noted that these sites are bounded by an existing industrial activity which is zoned accordingly in the Southland District Plan. Therefore any proposals to further develop these sites for more sensitive land use activities would need to consider the effects of doing so on the Lorneville Plant. Policies in both the Southland District Plan and regional plans seeks to avoid, remedy or mitigate reverse sensitivity effects so it would be required to demonstrate that this had been achieved should any further development of a residential or other sensitive nature occur in these areas.

What next: Response is acceptable. Written approvals from the affected neighbouring landowner/s will be required.

Issue #23: *A description of any anticipated plant expansion and whether or not the supplied modelling reflects the actual and likely effects of the proposed activity over the term of the consent. Is it likely that the emissions from the site will remain at the status quo (as modelled) for the requested 35 years?*

S92 Response: The coal fired boiler (CFB) steam output profiles used to define the air emission profiles were based on the 2013/2014 processing season when the new rendering plant was fully commissioned. The proposed ambient PM₁₀ percentile concentrations limits are therefore based on the current processing rates, plant design and associated CFB operating profiles.

The proposed conditions of consent will require Alliance to achieve these limits, including a requirement to reduce PM₁₀ within five years of the consent being granted. Alliance will need to manage its processing activities and/or controls on the CFB so as to achieve these limits for the duration of the consent.

What next: Conditions of consent will need to be developed that limit emission rates of SO₂ and PM₁₀ to the assessed rates, or lesser values where the decision makers determine that further mitigation is appropriate. Conditions should also specify an appropriate monitoring regime for stack emissions, rather than relying on limited ambient monitoring alone.

Issue #24: *Inclusion of an annual check on the hydrolyser exhaust gas extraction to the boiler, or an explanation as to why the applicant considers this unnecessary.*



S92 Response: Section 5.3 of the odour mitigation report (Appendix R to the AEE) recommends annual checking of the blood dryer’s exhaust air extraction system that discharges this odorous stream through the CFB primary combustion air system. It is considered reasonable for Alliance to include the hydrolyser exhaust extraction as part of this annual check, especially as it is part of the same extraction and combustion system that targets the blood dryer.

What next: Response is acceptable.

Issue #25: *Clarification of whether or not the meal room and loadout areas are the only direct discharges of odour on the site.*

S92 Response: The meal room is the only rendering building that has its air directly vented to the atmosphere. However, historically there are reasons why rendering odours have been noticed beyond the site boundary. During the commissioning phase of the new rendering plant there were issues of odour, however these emissions are now effectively contained. Raw material odours associated with unloading operations at the new raw material reception building were also suspected of causing some rendering offal type odours beyond the site boundary, however the new extraction system which was installed in 2015 has controlled these emissions appropriately.

The Golder Associates Report (Appendix F to the AEE) also observes that sulphide odours associated with the fellmongery wastewater are likely to have been noticed on certain occasions during the last few years, and some of these are likely to have been attributed by the community to the rendering plan operation.

What next: Response is acceptable.

E. NOT COVERED TO DATE

As the S92 response arrived on a similar date as our Memo to ES outlining our comments on the AEE, appendices and conditions, we have provided in the table below matters requiring further clarification.

No.	Issue	Raised in Memo Dated	Clarification still needed
1 - 25	See above as in s92 Response		See above
AEE #26	The applicant has proposed a reduction in the boiler discharge limit (after five years) to 250 mg/m ³ . Section 8 of the AEE does not provide sufficient detail as to how this reduction will be made. Given this reduction is within the scope of the current application, the details of the upgrade required to meet the lower proposed concentration limit should be specified.	19.02.16	Applicant to supply further details on upgrade to meet proposed reduced limit need to be provided to give certainty.
AEE #27	The discharge to water limits are lower than both the ANZECC (2000) 80% trigger value and the USEPA (2013) chronic criteria, and only slightly higher than the Freshwater NPS attribute state, which was set to provide 80% species protection. Due to the unsuitable nature of the habitat within	19.02.16	Clarification as to why - s92



	the Makarewa River, most sensitive species are not commonly found, if at all, below the mixing zone, and thus the site-specific value is considered an appropriate limit for this river. A higher level of treatment is feasible.		
28	There seems to be some confusion as to whether wastewater irrigation will continue once the BNR plant is operating and WAS is being generated and spread on farmland.	19.02.16	Clarify – s92
29	Upgrade Plan is very vague, with a lack of certainty as to what will occur when.	19.02.16	Require the Upgrade Plan as part of this process
30	A number of BPOs are mentioned in the AEE but there is no certainty that any will be adopted as adaptive management is proposed, e.g. sulphide reduction in fellmongery, bio-gas capture from anaerobic pond, agitation of raw sludge, the use of lime at the monofill, the covering of the monofill, good management practices to reduce odour during sludge spreading	19.02.16	Upgrade plan as part of this process, with triggers as to when upgrades are required, as well as Sludge Management Plan and other Management Plans
31	No ammonia limit in discharge water monitoring	19.02.16	Why – s92
32	The upgrade timeframe is very long. If there is uncertainty over what is to occur, a short term consent is more appropriate. Five years for the upgrade plan is too long.		Why; justify – s92 or suggest 5-yr consent
App E #33	The 2013 ambient monitoring was undertaken in a wet winter which may have underestimated background PM ₁₀ contributions from Wallacetown or Invercargill airsheds.	19.02.16	Applicant to provide further information as to expected background source contributions during a more typical winter scenario (drier, less rain).
App F # 34	There are a very small number of survey respondents in some survey groups, which may lead to responses which may be unrepresentative of overall surrounding population	19.02.16	Applicant to provide further information to clarify/estimate the overall population resident in the area around the site, and evidence to demonstrate that the responses are reflective of the overall population.
35	The complaints data reviewed (as part of the assessment) was for the period up to July 2014. It is not clear why complaint data for the entire 2014 period was not reviewed. Given the report was updated in October 2015, the full 2014 complaint data set is likely to have been available and should have been reviewed to provide a complete assessment.	19.02.16	All complaint data from 2014 should be reviewed to provide a more complete assessment of trends.
App G # 36	The report references a Biofilter Management Plan, but there is no copy of this plan included in the consent application.	19.02.16	S92 - Applicant to supply the Biofilter Management Plan.
37	Anecdotal evidence is used to support the conclusion that the management change to process waste releases has reduced odour emissions from the fellmongery. This is not supported by the baseline odour survey report (Appendix F) as there have been no odour surveys conducted subsequent to the management change. It is unclear if there have been any reductions in complaints received after the change.	19.02.16	S92 - more evidence to support the assertion that the fellmongery management change has resulted in reduction in odour effects.



38	<p>It is not clearly stated which additional mitigation method is proposed for the fellmongery discharges to air. Two options are mentioned to be BPOs but it is not stated whether they are proposed to be installed.</p> <p>Appendix G says that the applicant is investigating them but there is no timeline provided, and there is no clear outcome as to which method is proposed for further mitigation.</p>	19.02.16	S92 – clarification as required as to what mitigation method is proposed and timeline for implementation.
App J # 39	The sludge generated by the BNR plant will only be dewatered and not digested (as stated in one of the reports). Moreover, only the aerobic sludge will be used. Anaerobic sludge quantities are not taken into account within the sludge/SYS land disposal scheme.		S92 - Clarify sludge and its mineralisation rate. Modelling to be based on realistic mineralisation rates. What happens to anaerobic sludge and pond sludge?
40	What is the loading, effects and management of phosphorus for WAS/SYS application (i.e. if soil retention is being relied upon what is the site life)?	20.08.15	Request via s92
App M #41	Based on the modelling predictions, the significance of the contribution is an arguable point. Peak contributions of 4 - 5 ug/m3 (24-hr average) in urban areas with high background concentrations would typically be regarded as significant, and not "negligible" as stated in the AEE.	19.02.16	S92 - undertake a more robust analysis. Specifically, further examine the AEE's argument that the highest 5% of GLCs at the Invercargill airshed are not expected to occur on cold winter days when background concentrations are high. Analyse measured PM ₁₀ concentrations in Invercargill on days when highest GLCs are predicted. Consider seasonality of CFB emissions.
42	<p>Use of 1.5 measured/modelled PM₁₀ ratio may result in under-prediction of peak GLCs.</p> <p>Similarly the use of 0.7 ratio for SO₂ (rather than 0.9 for the 95th percentile) may result in under-prediction of peak SO₂ GLCs.</p>	19.02.16	S92 - consider the robustness of peak GLC predictions and amend as appropriate. Discuss typical boiler output profile (hourly averages) during a worst case 24 hour period. Recognise that limited ambient monitoring has occurred at one location only. Discuss uncertainties associated with peak hourly SO ₂ predictions, and revise as appropriate.
App P # 43	The hydraulic loading of 50 mm per application event (within 24 hrs) is high, resulting in forced drainage, even if the soils are less than field capacity.		S92 – can the return period be lessened with lower application depth. Nothing about



			PAW of the soils.
App R # 44	The sludge application area shown on Drg 3 is significantly larger than the current wastewater irrigation area shown in the Soilworks Report. This may need further soil investigations to cover the entire area.		Provide soils information for the entire area that sludge is to be spread on
App S # 45	Vector attraction to the monofill. No assessment.		S92 as to what effects are likely to be and mitigation
App T # 46	Tables 5.3.2 and 5.5.4 in the EMP do not allow direct comparison between pre and post upgrade		S92 clarification
47	The new BNR plant is supposed to alleviate the effects from the existing WWTP. Keeping the same discharge limits for most parameters is just allowing for more volume to be treated, not better quality.		S92 clarification
48	Odour monitoring		Needs to be added to the EMP
App U #49	No details on meal room extraction system (baghouse; hood extraction). As the meal room baghouse and hood extraction systems form part of the management systems for site air discharges, their management measures should be incorporated into the Air Discharge Management Plan. This would include measures relating to baghouse performance.	19.02.16	Additional material should be included in the ADMP on meal room discharges management.
50	There is currently no details provided in the Air Discharge Management Plan on the following performance monitoring as outlined in Section 6.3.7 of Appendix G (process odour mitigation report): <ul style="list-style-type: none"> • Biofilter and raw material reception building fan motor current draw (amps); and • Motor and cooling fan hours. 	19.02.16	Additional OCS performance measures should be included in the ADMP.
51	A recent management change has involved staggering of weekend drum content discharges to reduce sulphide emissions. There is currently no details provided in the Air Discharge Management Plan on this mitigation measure.	19.02.16	Additional material should be included in the ADMP on the operational procedure for staggered release of fellmongery drum process wastes.
Conditions Air # 52	The Wastewater Treatment Upgrade Plan is required now. Parts of the draft condition 29 refer to measures and effects that need to be reviewed as part of the process prior to granting or refusing consent.	19.02.16	Applicant to provide Wastewater Treatment Upgrade Plan.
Conditions # Water 53	Ammonia, other forms of nitrogen and DRP limits on wastewater are not included		Applicant to provide values for condition.
54	TN, TP and DRP are not included in river water monitoring		Applicant to provide triggers

We trust that this provides a summary of information that we consider is required to fully understand what the applicant is proposing and the effects from the activities. The main area that is deficient is the lack of Upgrade and Management Plans. As the applicant is relying on adaptive management to some extent, then it is important that the plans are provided to enable an assessment as to the robustness of the management and operation and what is undertaken when environmental triggers are reached.



Comments on Alliance Lorneville Wastewater and Associated Reports

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Regards,

Rob Potts