

DIRECTOR SUSTAINABLE DEVELOPMENT SERVICES REPORT

8th August 2006

DSDS1	WASTEWATER TREATMENT SYSTEM FREDERICKTON ABATTOIRS FILE: T6-04-399 TJN
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SUMMARY:

Reporting that Council has received an application to construct an abattoir waste water treatment system and irrigation of treated effluent, for which objections have been received.

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Applicant: ERM Port Macquarie
Subject Property: Treatment Ponds:
Lot 1711 DP 703187, Raymonds Lane, Frederickton

Irrigation Sites:

Lot 29 DP 752437, Quarry Road, Fredrickton
Lot 31 DP 752437, 37 Raymonds Lane, Frederickton
Lot 201 DP 596719, 47 Raymonds Land, Frederickton
Lot 204 DP 713220, 67 Raymonds Land, Frederickton
Lot 205 DP 713220, 77 Raymonds Land, Frederickton
Lot 132 DP 630462, 127-133 Great North Road, Frederickton
Lot 1713 DP 717943, 151 Great North Road, Frederickton
Lot 2 DP 853082, 82 Collombatti Road, Frederickton
Lot 192 DP 854714, 34 Quarry Road, Frederickton
Lot 191 DP 854714, Quarry Road, Frederickton
Lot 5 DP 838794, 25 Quarry Road, Frederickton
Lot 1 DP 1041815, 555 Pacific Highway, Frederickton

[\(Appendix A\)](#)

Zone: 1(a3) Rural "A3" Agricultural Protection Zone

Background

In 1995 Council approved extensions to the existing Frederickton Abattoirs including the installation of a waste water treatment system (WWTS).

The consent was modified in 1999 to allow for staging of the development. Stages 1 and 2 relates to extensions to the stockyard, kill floor, offal room, chillers and freezers. Stage 3 specifically relates to the upgrade of waste water, solid waste disposal and odour control measures and requires preparation of a Plan of Management.

In 2002, as part of this Plan of Management, the applicant proposed to modify the already approved WWTS by: -

1. Relocating the WWTS from the abattoir land onto another parcel of land which was not identified on the existing consent.
2. Include an additional 80 hectares of land for the irrigation of treated effluent not previously identified on the original application.

Council resolved to advise the owner that this would require the submission of a fresh application. This was subsequently lodged and forms the application currently before Council. Should Council resolve to approve this new system, it will form part of the required Plan of Management.

Description of Proposal

The applicant proposes to construct a three pond WWTS within an existing quarry to complement the existing "save all". This comprises the following: -

- 4.3ML initial waste water treatment pond incorporating mechanical aeration and biological treatment.
- 1.28ML secondary polishing pond incorporating mechanical aeration.
- 1.43ML shallow wet weather storage pond.
- Irrigation network consisting of poly pipe delivery lines and atomising sprayers/sprinklers.

As this two stage aerobic treatment system involves relatively new biological treatment technologies, it is proposed to initially operate the system on a trial basis with controlled monitoring being undertaken. The treatment system receives effluent comprised of runoff from the stock holding pens, wash down water from the livestock processing floor, paunch waste and residual water and washdown water from the rendering plant. Bulk solids are captured in an interception pit for rendering or disposal. Solids are removed at the save-all. Blood product is collected separately and disposed off-site.

Heads of Consideration

The proposal has been examined having regard for the Heads of Consideration identified under section 79C(1) of the Environmental Planning and Assessment Act 1979, with the following matters deemed to be of particular relevance.

Kempsey Local Environmental Plan 1987

The proposal is considered to be ancillary to the existing abattoir which is defined as a "rural industry" and is permissible in the zone with consent.

The subject lots are zoned 1(a3) Rural "A3" Agricultural Protection. The objectives are: -

- a) to conserve land particularly for agricultural uses.
- b) to provide for compatible tourist uses.
- c) to protect arterial road frontages from developments which are visually intrusive or generate excessive traffic.

The proposal is considered to be consistent with the zone objectives as irrigation has the ability to substantially improve pastures, provided the final treated waste water meets industry standards.

Designated Development

The proposal is defined as "designated development" under Schedule 3 of the Environmental Planning and Assessment Regulation 2000 as it is proposed to treat more than 1000 tonnes per year of sludge or effluent.

In accordance with the requirements of the Act and Regulations, an Environmental Impact Statement (EIS) has been lodged in support of the application. A Specification for the EIS was sought by the applicant from the Director General of Planning. It is considered that the EIS has addressed all the issues required by the Director General's Specification.

Integrated Development

Pursuant to Section 91 of the Environmental Planning and Assessment Act 1979, the proposal is "integrated development" as it requires the Department of Environment and Conservation to issue a licence under the provisions of the Protection of the Environment Operations Act 1997. The DEC has amended the existing licence (Environment Protection Licence 3117 – Tolsat Pty Ltd) and provided General Terms of Approval to Council. The DEC advises that the proposal, if properly managed, will result in minimal impacts and improve environmental outcomes, compared to the current operation.

State Environmental Planning Policy 33 – Offensive or Hazardous Industries

In accordance with the requirements of the SEPP and the Department of Planning Guidelines, the proposal is a "potentially offensive industry". Through assessment of the provided documents (including the EIS) and consultation with government departments, it is considered that provided proposed measures are incorporated to monitor and control potential odour, noise and water quality impacts, the proposal is not an actual "offensive industry" within the meaning of the policy. The Department of Environment and Conservation has indicated that they are willing to licence the facility in accordance with the provisions of the Protection of the Environment Operations Act 1997. Department of Planning Guidelines state that where the DEC is willing to issue a licence, then it is unlikely that a proposal can be considered as an offensive industry.

State Environmental Planning Policy 14 – Coastal Wetlands

Approximately 300m to the north of one of the irrigation sites is Collombatti Swamp. This is listed as coastal wetland 478 under the provisions of this SEPP. With adequate management of irrigation waters it is considered that impacts on the functions and quality of the wetland will be insignificant and may actually improve.

North Coast Regional Environmental Plan 1988

Clause 12 requires that Council consider the impacts of development on prime agricultural land. The treatment ponds are located within an existing quarry. The proposed waste water application has the ability to improve pasture production. It is considered that the impacts are acceptable.

Clause 15 requires that Council consider the impacts of development on wetlands and fishery habitats. It is considered that the proposed means of effluent disposal will result in no significant impact on wetlands or fisheries.

DCP-12-Conflicting Land Uses

DCP 12 provides a buffer zone around the Abattoir site as a means to prevent land uses within the buffer area that might create a conflict and lead to severe restrictions on the operation of the abattoir. The effective treatment of effluent will aid in the reduction of impacts on adjoining landuses.

Environmental Impact

Council is required to assess the impacts of the proposal. Prior to the applicant compiling the EIS, consultation with Council, the DEC and the Department of Planning identified a number of issues that are required to be assessed as part of the development application.

Noise

Noise is expected to be created from compressors (supplying air to the aeration system) and a pump at the wet weather pond outlet (to supply treated effluent to the irrigation system). In order to comply with the provisions of the Industrial Noise Policy, modelling has shown that a noise level of no greater than 82dBA at the source should exist. Readings taken from the pumps show that the maximum noise produced is 68.3dBA, which equates to a noise level of 16.3dBA at the houses, well below the required level.

It should also be noted that these readings were taken from unprotected pumps. The proposal provides for enclosure of the pumps for weather protection purposes which will further mitigate noise emissions.

Odour

One of the major issues associated with any waste water treatment system is that of odour. The applicant has identified three potential sources of odour: -

1. Treatment ponds
2. Irrigation waters
3. Desludging process

In undertaking an assessment of potential odour impacts, a benchmarking assessment was undertaken, taking into account the following: -

- Surrounding topography, land uses and existing conditions.
- The sensitivity of and the distance to the nearest receptors.
- Potential odour sources related to the proposed waste water treatment system and processes.
- An estimate of the ground level odour concentrations associated with the proposed waste water treatment system based on expected meteorological conditions and compared to equivalent operations.

As with the noise assessment, the nearest sensitive receptors are dwellings located on Raymonds Lane, a distance of 220m from the proposed ponds.

In assessing odour impacts, the DEC guidelines entitled "Approved Methods for Assessment of Air Pollutants in NSW" gives performance criteria to apply. In accordance with the guidelines, an odour performance criteria (O.U.) of 6.0 OU has been adopted.

In making the analysis of odour impacts, the EIS concludes that there is very little publicly available information regarding odour from abattoir waste water treatment systems and subsequently sourced a report from the Goulburn Abattoirs. The applicant considers the modelling assessment used in this example were considered appropriate for comparative analysis due to the following: -

1. The modelling did not assess emissions from anaerobic ponds as these were proposed to be covered and incorporate gas collection and flaring, therefore resulting in negligible odour emissions. This is consistent with the proposed wastewater

treatment process at Everson's Abattoir which will not incorporate anaerobic ponds.

2. The modelled abattoir is a larger facility than Everson's Abattoir with a throughput of more than twice the number of head per day.
3. The emission rates used in the modelling were derived from an abattoir that incorporates a rendering plant, which is consistent with operations at Everson's abattoir.

The EIS suggests that there are a number of mitigation measures that will result in minimal odour impacts on adjoining residences: -

1. The site for the wastewater treatment facility is located in a semi-rural setting away from a higher density of potential sensitive noise receptors.
2. The ponds are to be located in an existing quarry that has been excavated into a hillside with deep walls on three sides. This is expected to buffer prevailing cross winds in the direction of the nearest receptors and may have the effect of increasing turbulence thus improving dispersion of the odour and therefore reducing ground level concentrations. Further, it is contended that the prevailing meteorological conditions in the region result in winds predominately blowing away from the nearest sensitive receptors.
3. The quarry site is adjoined by a large stand of native vegetation to the east and south east, further buffering winds in the direction of the main township of Frederickton and aiding dispersion of odours due to increased turbulent mixing.
4. The proposed treatment using biological decomposition under mechanical aeration is expected to minimize potential odour emissions from the effluent ponds. The aeration of ponds has demonstrated benefits in the reduction of odours when compared to anaerobic treatment.
5. The ponds will be managed appropriately to ensure odour emissions are minimized.
6. Irrigation of effluent will be dependant on achieving optimum water quality to ensure irrigated water does not result in odour production.

It is therefore considered that the modelling results are conservative and can be relied upon as a reasonable prediction of odour impacts.

However, given a lack of technical data regarding the use of the proposed treatment additive (Ultrazyme) there remains some uncertainty in respect to potential odour impacts. DEC are of the opinion that consent can be granted subject to appropriate conditions, which will be applied through both the Development Consent and the DEC licence. These conditions will include that stringent monitoring take place at nearby residences for a 12 month period to ensure that the predicted impacts are correlated to actual impacts.

The proposed wastewater treatment system will be an improvement on the existing situation provided the system is maintained and operated effectively.

While the ongoing use and water irrigation may not result in adverse odour impacts, the desludging of the ponds (carried out after several years of operation), is a process which is likely to result in adverse odours. As impacts would occur infrequently and over short periods, it is considered that impacts would be acceptable. The process should be addressed in a management plan to be submitted to Council to identify best practice procedures to minimize impacts on residences.

Irrigation and Soil Conditions

Provided the wastewater treatment ponds operate effectively, the quality of treated effluent is expected to be high. The following Comments have been provided by specialist sections of the DEC: -

1. Phosphorus and nitrogen budgets appear adequate considering the large irrigation area available and the favourable soil conditions.
2. Soil conditions appear generally suitable for irrigation of effluent, however the proponent has averaged conditions over all irrigation areas.
3. Potassium, while being an essential plant nutrient, contributes to the salinity of effluent and in excess can adversely affect the uptake of other nutrients by plants and affect soil stability and animal health.

As part of an overall Management Plan, an irrigation management plan will need to be submitted which specifically addresses management of soil conditions in specific paddocks, and the ways to eliminate the potential for potassium build up in the soil. Given that the irrigation area is of sufficient size and quality to allow for disposal of treated effluent, it is considered that the proposal can operate without any negative impacts upon surface and subsurface waters.

The proposal was advertised in accordance the requirements of the Environmental Planning and Assessment Act 1979, from 21 March to 28 April 2006. A total of 19 submissions being received. 17 of these were objections which may be summarised as follows: - [\(Appendix B, Part 1, Part 2, Part 3, Part 4, Part 5, Part 6, Part 7, Part 8, Part 9, Part 10\)](#)

Objection	Planning Comment
1 If the discharge of effluent is safe to drink, why doesn't Council recycle some of it back to their own system for irrigation purposes?	1 The effluent is safe for irrigation purposes. Treatment is not to drinking standard.
2 When the highway bypass goes ahead, the land in question will be very valuable for residential development.	2 The land is not identified in Council's Residential Release Strategy
3 The proposal will adversely affect land values.	3 This is not substantiated and no unacceptable impacts are expected.
4 To what quality will the effluent be treated, as in times of heavy rain it may run into Easter Creek.	4 The effluent will be tertiary treated with pollutant concentrations carefully controlled and monitored by the DEC. Wet weather storage is to be sized to accommodate periods of heavy rain.
5 Object strongly to any further upgrades in size or	5 No upgrade of the actual meat processing facility is

use of the facility.	proposed.
6 The proposed WWTS will spread water to greater areas and in larger quantities than ever before, providing odours to make residents more squeamish and unwell.	6 The waste water will be treated to a high level and it is anticipated that it will be odourless. Constant monitoring will be required during the trial period to ensure that the odour concentrations predicted in the adopted models are achieved.
7 The proposed WWTS will generate more industrial noise within the area and odours are very likely to permeate the air	7 See "Noise" above
8 Water based small insect population will be affected by the proposed WWTS and could pose a real threat to human health.	8 Management of the potential for small insect populations to utilise the ponds is a proposed condition of consent.
9 Objects to the company implementing a wastewater disposal system by spraying blood products onto all the surrounding lands and causing increased smell, soil damage, pollution and contamination to those lands and the waterways onto which runoff flows.	9 It is not proposed to spray blood products onto adjoining lands. All blood and solids will be removed with remaining waste water to be treated by exposure to UV radiation and biological processes. The purpose of irrigation onto pastures is to remove remaining nutrients by plant uptake.
10 The use of sediment ponds can cause unpleasant odours and health risks due	10 See comments under "Odour"

	to the presence of bacteria.	
11	Objector finds spray irrigation disturbing as the land can only cope with so much bacteria before problems appear.	11 . See "Irrigation"
12	Great concern that the ponds may leak and cause seepage into the waterways and my paddock.	12 Conditions are proposed to ensure ponds are designed and constructed to prevent leakage
13	The EIS clearly states that the Ultrazyme product will not work well if the wastewater contains bleaches, sanitizers and other cleaning products.	13 As part of the development consent the applicant should be required to compile a list of compatible cleaning products that will allow the Ultrazyme product to work efficiently.
14	The operation will be in close vicinity to the local wetland area meaning that the native vegetation and aquatic life will be affected by this water disposal.	14 Assessment of impacts indicates there will be no significant affect on wetlands. See "Irrigation" and "State Environmental Planning Policy 14 – Coastal Wetlands".
15	Dust borne diseases being spread out if area has been spray irrigated and then allowed to dry out.	15 Disease vectors have been assessed by the Department of Health and provided effluent is treated adequately, they are satisfied with the proposal.
16	As the proposed system is not fully automated, it will rely on abattoir management to control it which is open to abuse which could allow for	16 Any system requires management. Licensing and consent conditions, together with required monitoring will provide reasonable assurance of management of the

<p>untreated wastewater disposal to be put through the irrigation system.</p>	<p>system.</p>
<p>17 As an alternative, the water could be recycled through the abattoir.</p>	<p>17 The system relies on irrigation of the effluent.</p>
<p>18 Do the landholders of the properties that have given permission to receive irrigation waters on their land realise the implications?</p>	<p>18 The owners of properties that are to receive irrigation waters have signed the development application. And a Restriction as to User should be required to ensure ongoing access to and maintenance of irrigation areas.</p>
<p>19 What happens when a landholder decides to sell their property and the new owner does not want the water to be irrigated onto their land.</p>	<p>19 As part of the development consent, all properties involved in the application will be required to put in place appropriate restriction as to users, binding successive property owners to the provisions of the WWTS and irrigation requirements.</p>
<p>20 The residents of Frederickton should receive more information on the WWTS so they can make an informed decision.</p>	<p>20 An Environmental Impact Statement was lodged in support of the application and was placed on public exhibition. It is considered that this contained sufficient information to make an informed decision.</p>

Advice from Relevant Government Departments

In accordance with the requirements of the Environmental Planning and Assessment Act and Regulations, the proposal was advertised

and a number of government departments were notified. The responses can be summarised as follows. [\(Appendix C, Part 1, Part 2\)](#)

Department of Environment and Conservation

The DEC provided Council with specialist advice relating to technical aspects of the proposal. This included a detailed analysis of the odour, noise and soil quality impacts. They advise Council that the proposal should be able to proceed subject to strict conditions.

Department of Planning

Following initial consultation, the Department of Planning advised that they would only respond during the advertising phase if there was an issue of major significance. A copy of all submissions was sent to the Department. No further correspondence has been received.

Department of Primary Industry

The Department advised Council that as the project raised no key fisheries or mineral resources issues no concerns needed to be raised.

New South Wales Health

The NSW Area Health Service made comments regarding public access, mosquito control and the possibility of using subsurface irrigation if the waste water was to be inadequately treated. The first two issues have been incorporated as conditions of development consent. The issue of subsurface irrigation has led to the DEC placing more stringent licensing requirements on the proposal.

REPORT IMPLICATIONS

- ***Environmental***

The proposed waste water treatment system represents a much more sustainable practice than currently being undertaken at the abattoirs. It is envisaged that the system will significantly improve the quality of the waste water coming from the abattoirs, a view shared with the Department of Environment and Conservation. An ongoing monitoring program would ensure that the environmental benefits identified by the Environmental Impact Statement are continue for the life of the abattoirs.

- *Social*

There are a number of houses within a reasonable proximity to the proposed waste water treatment system. The Environmental Impact Statement has predicted that residents of these dwellings will not be adversely affected by noise or odours. In order to confirm this the applicant will be required to submit the results of a monitoring program within 2 months of commencement of the operation to ensure that these noise and odour targets will be met.

- *Economic (Financial)*

Once established, the waste water treatment system will provide a cost effective solution to waste disposal issues.

- *Policy or Statutory*

In accordance with clause 81 of the Environmental Planning and Assessment Regulation 2000, Council cannot determine the application until 21 days after Council has forwarded all submissions to the Department of Planning. All submissions were sent by 1 June 2006, with no further submission received from the Department. Council may now proceed to determine the application.

In accordance with section 83 of the Act, the consent does not operate until 28 days have lapsed from the date of the notice of consent is given to the applicant.

Recommendations

- A. That consent be granted subject to the following conditions:-
1. This consent is not to operate until after the expiration of twenty eight (28) days of the date of issue of consent.
 2. The development referred to in this application is to be carried out substantially in accordance with the approved development plans as modified by any conditions of this consent.

3. This consent has been issued on the basis that Council has been appointed as the Principal Certifying Authority and Council has accepted the appointment and will be issuing the construction certificate.
4. This consent does not permit commencement of any works. Works are not to commence until such time as a Construction Certificate has been obtained and the appointment of a Principal Certifying Authority.
5. A Construction Certificate shall not be issued until all relevant conditions of this consent have been complied with.
6. During the initial 6 months of operations of the Waste Water Treatment System a monitoring program is to be implemented with the following monitoring to be undertaken:-
 - a) Noise monitoring undertaken at the nearest sensitive noise receptors in accordance with the requirements of the NSW Industrial Noise Policy.
 - b) Odour assessment once the ponds are fully operational, with readings to be taken at the nearest sensitive noise receptor.
 - c) Monitoring of all other inputs and outputs is to be undertaken in accordance with the requirements of Environmental Protection Licence 3117 – Tolsat Pty Ptd (EPL 3117).
7. The proposed means for collecting and reporting monitoring results are to be compiled in a Monitoring Program which is to be submitted to Council for approval prior to release of the Construction Certificate.
8. The Irrigation Management Plan required by condition U1 of EPL 3117 is to be submitted to Council for approval prior to release of the Construction Certificate. This is to include (but not limited to) the following:-
 - a) Clarification of the roles and responsibilities of the various stakeholders in relation to the management of irrigation.

- b) Standard operating procedures to be followed when irrigating including triggers, responses and contingencies.
 - c) Log to record the use of ultrazyme.
 - d) Information that addresses the management of the soil condition in specific paddocks, particularly in those areas that may have already been subject to extended periods of effluent irrigation or where soil conditions are more limited in capacity for sustainable effluent irrigation.
 - e) An assessment of the potential for potassium build-up and measures to mitigate this.
 - f) Details of how irrigation will be managed during wet weather to ensure compliance with all conditions of this licence.
 - g) Provisions to be made for the erection of temporary fencing to restrict stock from grazing on land immediately following irrigation or until soil moisture is sufficiently reduced.
 - h) Details on how it is proposed to suppress any potential dust within the irrigation areas.
 - i) Details of the proposed irrigation system, including an irrigation network plan is to be included. Where this involves pipes crossing Council road reserves, application pursuant to s138 of the Roads Act 1993 are to be submitted for approval.
9. Detailed engineering plans for the proposed holding and treatment ponds are to be provided for approval prior to release of the Construction Certificate. Such plans are to include an analysis of soil used for construction and are to be certified by a suitably qualified Geotechnical Engineer indicating that suitable means have been employed to ensure leakage will not occur, including the proposed means of stabilising and maintaining dam walls so as to prevent soil erosion

10. Upon completion of the ponds, a Works as Executed Plan shall be provided by a suitably qualified person certifying that the ponds have been constructed in accordance with the approved plans.
11. Regular monitoring of the capacity of the holding pond and rate of settlement of sludge is to take place. Details of the means for disposing sludge (if any) are to be submitted prior to release of the Construction Certificate.
12. The applicant is to provide a list of all cleaning and other chemicals used within the everyday operations of the abattoir. This list is to be accompanied by an appropriately qualified person stating that the list of chemicals will not result in adverse impacts to biological agents required in the treatment system.
15. Lot 171 DP 717943 and Lot 1711 DP 703187 are to be consolidated onto the one title prior to release of the Construction Certificate.
16. Creation of an appropriate Restriction as to User nominating Kempsey Shire Council as the sole party to vary, modify or extinguish is to be placed on the title of all lands identified as being required for waste water disposal. The Restriction is to provide for unrestricted rights for the proprietor of the abattoir to install and maintain irrigation equipment, erect temporary stock fences and discharge waste water as required in a form that binds successive owners. The restriction is to be registered prior to release of the Construction Certificate.
17. Written advice shall be provided to Council indicating the date of commencement of the Waste Water Treatment Facility.
18. At the conclusion of two(2) months of commencement of operation of the Waste Water Treatment System, a report is to be submitted detailing the results of the noise and odour monitoring. Should the results indicate that the Waste Water Treatment System is not operating within the relevant guidelines, attenuation measures are to be put in place and a further report presented to Council within twenty eight (28) days.

Should the results of this still reveal non compliances with respect to noise and odour, the operation is to cease until Council is satisfied that the Waste Water Treatment System can be operated within the appropriate noise and odour guidelines.

18. At the conclusion of 6 months of operation, the results of the monitoring are to be presented to Council for assessment.

In the event that non compliances are shown, a schedule of attenuation measures to be put in place is to be presented to Council for consideration.

20. The operation of the abattoirs is to cease immediately if, at any time, the proposed holding dam is full, required soil monitoring indicates that soils are unsuitable to receive waste water, or the relevant noise and odour criteria are not being achieved. Operations are not to recommence until prior approval has been obtained from Kempsey Shire Council and the Department of Environment and Conservation, having regard to information supplied by the operator.

Department of Environment and Conservation – General Terms of Approval

21. The premises also includes the effluent utilisation areas as specified as *Land owned by Tolsat Pty Ltd* in figure 5.7 Proposed Irrigation Allotments Part B of the Environmental Impact Assessment dated February 2006. These areas are defined as Lot 29 DP 52437, Lot 1712 DP 703187, Lot 5056777 DP 505667, Lot 2 DP 529242, Lots 4,5 DP 838794 and Lot 1 DP 1041815.
22. Location of monitoring/discharge points and areas.

The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

EPA Identification No.	Type of Monitoring Point	Type of Discharge Point	Description of Location
1	Quality and	Discharge	To be

	volume	to utilisation area	confirmed
2	Soil quality		Lot 1 on Figure 5.7 Proposed Irrigation Allotments in Environmental Impact Assessment dated 28 February 2006
3	Soil Quality		Lot 7 on Figure 5.7 Proposed Irrigation Allotments in Environmental Impact Assessment dated 28 February 2006
4	Soil Quality		Lot 10 on Figure 5.7 Proposed Irrigation Allotments in Environmental Impact Assessment dated 28 February 2006
5	Soil Quality		Lot 11 on Figure 5.7 Proposed Irrigation Allotments in Environmental Impact Assessment dated 28 February 2006
6	Groundwater quality		To be confirmed
7	Groundwater quality		To be confirmed

8	Groundwater quality		To be confirmed
9	Environmental monitoring		To be confirmed.

23 Volume and mass limits

For each discharge point or utilisation area specified below (by a point number), the volume/mass of:

- a) liquids discharged to water; or
- b) solids or liquids applied to the area;

must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of measure	Volume/Mass Limit
1	kL/day	To be confirmed

24 Requirement to monitor concentration of pollutants discharged

For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns.

Water and Land

Point 1

Pollutant	Units of Measure	Frequency	Sampling Method
Biochemical oxygen demand	mg/L	Weekly during trial	Grab sample
Faecal Coliforms	cfu/100mL	Weekly during trial	Grab sample
Nitrogen (total)	mg/L	Weekly during trial	Grab sample
Oil and Grease	mg/L	Weekly during trial	Grab sample

		trial	
Calcium	mg/L	Weekly during trial	Grab sample
Magnesium	mg/L	Weekly during trial	Grab sample
Sodium	mg/L	Weekly during trial	Grab sample
Potassium	mg/L	Weekly during trial	Grab sample
Phosphorus (total)	mg/L	Weekly during trial	Grab sample
Sodium Adsorption Ration Conductivity	µS/cm	Weekly during trial	Grab sample
Chloride	mg/L	Weekly during trial	Grab sample
Total Suspended Solids	mg/L	Weekly during trial	Grab sample
pH	pH	Weekly during trial	Grab sample

Soil Points 2,3,4,5

Pollutant	Units of Measure	Frequency	Sampling Method
Cation exchange capacity	mmol(+)/kg	Special frequency 1 (see Note 1)	Special method 1 (see Note 2)
Exchangeable calcium	mmol(+)/kg	Special frequency 1	Special method 1
Exchangeable magnesium	mmol(+)/kg	Special frequency 1	Special method 1
Exchangeable sodium	mmol(+)/kg	Special frequency 1	Special method 1
Exchangeable potassium	mmol(+)/kg	Special frequency 1	Special method 1
Exchangeable aluminium	mmol(+)/kg	Special frequency 1	Special method 1
Exchangeable sodium percentage	%	Special frequency 1	Special method 1
Phosphorus (available)	mg/kg	Special frequency 1	Special method 1
Conductivity	µS/cm	Special	Special

		frequency 1	method 1
Nitrogen nitrate	– mg/kg	Special frequency 1	Special method 1
Phosphorus sorption capacity	mg/kg	Every three years	Special method 1
Saturated hydraulic conductivity	mm/hr	Every three years	In situ
pH	pH	Special frequency 1	Special method 1

Groundwater 6,7,8

Pollutant	Units of Measure	Frequency	Sampling Method
pH	pH	Quarterly	Groundwater sample probe
Conductivity	µS/cm	Quarterly	Groundwater sample probe
Standing water level	m AHD	Quarterly	In situ
Nitrogen nitrate	– mg/L	Quarterly	Groundwater sample probe
Nitrogen ammonia	– mg/L	Quarterly	Groundwater sample probe

25 Requirement to monitor volume or mass

For each discharge point or utilisation area specified below, the licensee must monitor:

- a) the volume of liquids discharged to water or applied to the area;
- b) the mass of solids applied to the area;
- c) the mass of pollutants emitted to the air;

at the frequency and using the method and units of measure specified below

Frequency	Unit of measure	Sampling Method
Continuous	kL/day	To be confirmed

26 Environmental Monitoring

The licensee must maintain and install a rainfall measuring device.

27 Pollution Studies and Reduction Programs

Irrigation Management Plan

The proponent must prepare and submit an Irrigation Management Plan which details how irrigation will be undertaken in a manner consistent with the requirements of this licence. This plan should include but not limited to:-

- Clarification of the roles and responsibilities of the various stakeholders in relation to the management of irrigation.
- Standard operating procedures to be followed when irrigating including triggers/responses and contingencies.
- Log to record the use of ultrazyme.
- Information that addresses the management of the soil condition in specific paddocks, particularly in those areas that may have already been subject to extended periods of effluent irrigation or where soil conditions are more limited in capacity for sustainable effluent irrigation.
- As assessment of the potential for potassium build up and measures to mitigate this.
- Details of how irrigation will be managed during wet weather to ensure compliance with all conditions of this licence.

28 Monitoring Plan

The licensee must submit a plan for monitoring effluent quality (during the trial) and soil/groundwater in irrigation areas.

Completion: Prior to the commencement of irrigation.

29 Pond Design

The licensee must submit final pond designs prior to commencement of construction work.

30 Waste water treatment contingency plan

The proponent will develop specific criteria for assessment of the acceptability of the waste water treatment system and to review the proposed pond system for suitability for the waste water treatment should the trial not prove effective.

Completion: Prior to the commencement of the trial period.

B. That the objectors be advised of Council's decision.

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R B Pitt
DIRECTOR SUSTAINABLE DEVELOPMENT SERVICES