

REPORT

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File No: RM13.474
Application No: RM13.474.01
Prepared For: Hearings Panel
Prepared By: Mathew Bell, Senior Consents Officer
Date: 4 September 2014

Subject: **Discharge Permit Application RM13.474.01 by Fulton Hogan Limited, to discharge contaminants to air for the operation of a Solar Drying Facility, Luggate.**

1. Purpose

- 1.1 To report and make recommendations on the determination of the above application under the notified provisions (Section 95 and Section 95F) of the Resource Management Act 1991 (the Act).

2. Background Information

- 2.1 Fulton Hogan Limited (the applicant) has applied to the Otago Regional Council (the Council) to discharge contaminants to air from a proposed solar drying facility (the facility) located on land owned by the applicant approximately 2 kilometres (km) north east of the town of Luggate. The contaminants discharged to air will be odour from the drying of secondary biosolids derived from the Queenstown Lakes District Council's (QLDC) Wanaka Wastewater Treatment Plant, which serves a population of around 7,000 people. The applicant has sought a consent term of 35 years.
- 2.2 Currently the QLDC transports secondary biosolids via trucks from the Wanaka Wastewater Treatment Plant to the Victoria Flats Landfill, 70 km away. The application notes that in 2011, 954.54 tonnes equating to 291 truckloads of secondary biosolids were transported to the landfill. The applicant proposes instead to transport the secondary biosolids to the proposed facility, and dry the biosolids over a period of 12-14 months to create a nutrient rich fertiliser which can be used as a soil conditioner.
- 2.3 In New Zealand between 250,000 to 300,000 tonnes of secondary biosolids are produced from wastewater treatment plants annually. Currently disposal of this product is mainly to landfill or used as fill for reclamation projects, only a small percentage is used as a soil conditioner. Throughout Australia, USA, Central America and Europe solar drying of secondary solids is undertaken, which has been proved successful, turning the solids into a soil conditioner for beneficial reuse.



Description of Receiving Environment

Site location

- 2.4 The applicant's proposed facility will be located, on land owned by the applicant, approximately 575 metres west southwest of the intersection of McKay Road and Luggate-Tarras Road (State Highway 8A), Luggate in the Queenstown Lakes District. The site is approximately 46.5 hectares (ha) in area, and legally described as Lot 2 DP 341373. The applicant currently operates a quarry at the site. The quarry has been operating for 5 years, producing approximately 12,000 tonnes of aggregate products per year. The remaining land at the site is currently in pasture.
- 2.5 The facility is proposed to be located on the north western part of the site. To the west and northeast of the proposed facility is a row of established trees.
- 2.6 The site was chosen as it is the closet land owned by the applicant to the Wanaka Wastewater Treatment Plant, the site is also large, and takes into account the surrounding rural land use, with lack of nearby residential dwellings.
- 2.7 Figure 1 below shows the location of the applicant's proposed facility in relation to the applicant's site.



Figure 1: Location of applicants proposed facility in relation to the applicant's site

- 2.8 State Highway 8A runs along the northern boundary of the site, beyond the road are large rural farm blocks owned by G P Clements, I G Fyfe, and K L Landreth, and Grandview Grazing Limited. Land to the east of the site is also owned by the applicant. Land to the south is owned by Contact Energy Limited, and the Crown. The Crown Land runs from the southern boundary of the site, along the western boundary to the State Highway.

- 2.9 The Clutha River/Mata-Au is located approximately 100 m from the western boundary of the site, and 250 from the southern boundary of the site.
- 2.10 The nearest dwelling is located on Church Road, across the Clutha River/Mata-Au, 850 m to the west of the site. The next closest dwelling is located approximately 1 km to the northwest of the site. Luggate is located approximately 2 km to the southwest of the site. In terms of industry, a closed QLDC landfill, and an operational sawmill are located across the Clutha River on Church Road. Figure 2 below shows the location of the applicant's proposed facility in relation to greater surrounds.

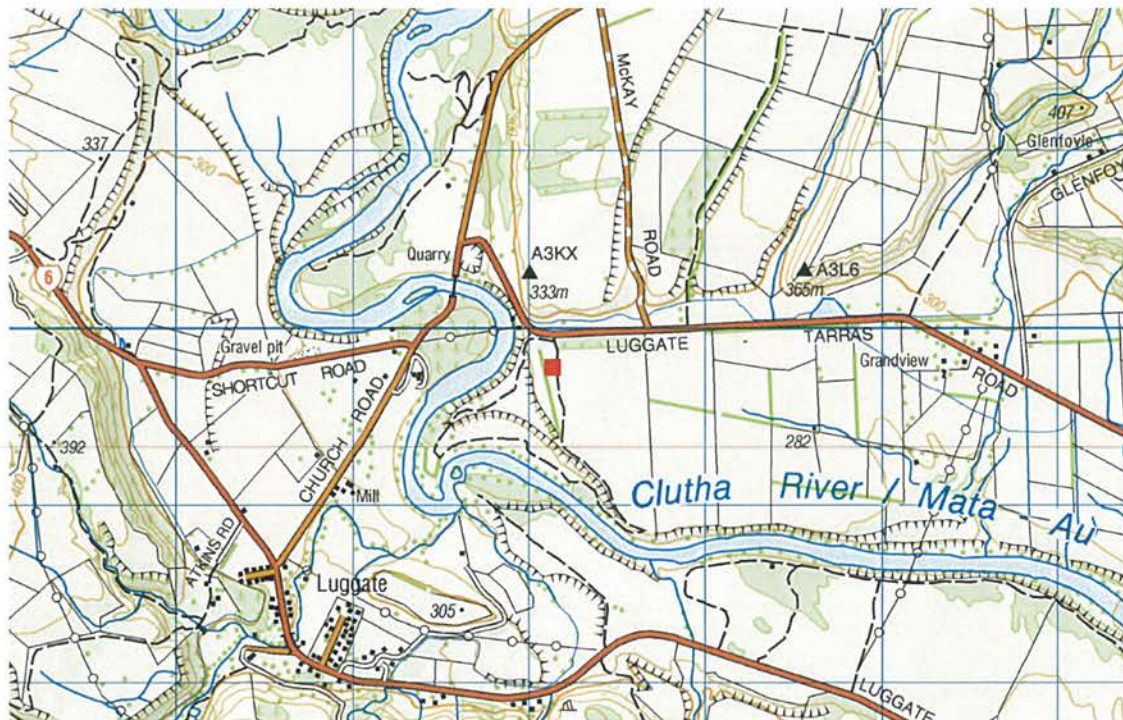


Figure 2: Map showing location (marked by red square) in relation to greater surrounds

Meteorology

- 2.11 The location experiences an average maximum temperature ranging from 24°C in summer with an average winter maximum temperature of 10°C. Average annual rainfall 650-700 mm, with an average of 2000 hours of sunshine per year.
- 2.12 The applicant has obtained meteorological data from the Wanaka Airport which is located approximately 3.5 km to the northwest of the site. This data shows a general pattern of prevailing winds from the west, with moderate to strong winds from the northwest and southeast. Figure 3 below outlines the wind rose from the Wanaka Airport.

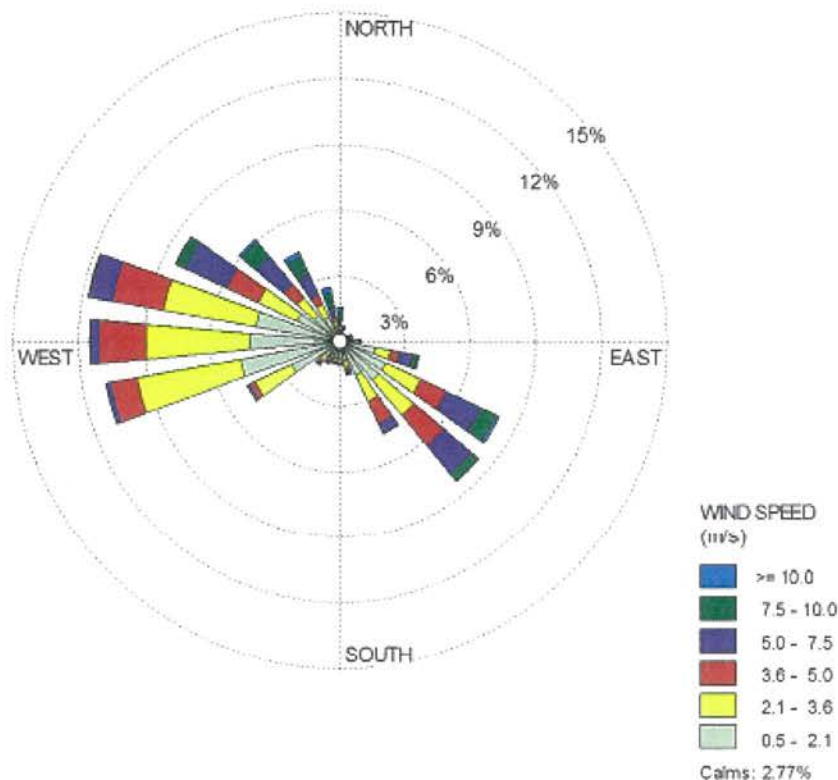


Figure 3: Wind rose data for the Wanaka Airport from NIWA for the years 2010-2012

Description of the Activity

Drying of Secondary Biosolids

2.13 The process proposed to be carried out at the site are described in detail in:

- 7.1 The applicant's Assessment of Environmental Effects Report, dated 28 February 2014 (AEE);
- 7.2 The specialist report on air discharges prepared by Specialist Environmental Services Limited, dated 26 January 2014 (Specialist Report).

2.14 Further information with regard to expected odour emissions, odour modelling, an odour management plan, recording weather conditions onsite, an assessment of seasonal climatic conditions on the effect of secondary biosolids drying and a consideration of alternate locations was requested from the applicant, and this information request was subsequently addressed by the applicant in its reply. The information submitted by the applicant as a result of this request forms part of this report's assessment.

2.15 The proposed facility will process secondary biosolids from the Wanaka Wastewater Treatment Plant. The secondary biosolids will be transported via covered trucks to the applicant's site. The application notes up to a maximum of four truckloads per day will be delivered (maximum of 4 tonne), which will usually occur on weekdays, unless a breakdown or incident occurs which necessitates weekend transport.

2.16 The facility, which is essentially a large glasshouse, will be approximately 1,400 m² in area, with dimensions of 108 m long, 13 m wide and 4 m high. The trucks will unload the solids directly into the facilities processing floor, which will be an impervious layer, sealed with asphalt with a bund to ensure no discharges to

land or water occur. The process will rely on solar radiation to warm the surface of the secondary solids, removing water via evaporation from the solids into the air, and out the facilities mechanical vents located along the roof area. A gap running the length of the facility above the level of the sludge will allow air to flow into the facility. Fans will be placed in the hall to create turbulence, ensuring continuous air flow into and out of the facility. The solids will be continuously mixed by an agitator to also ensure the solids remain aerobic. The processing moves the solids from one end of the facility to the other, with this process taking up to 14 months. By this time, the moisture content of the secondary solids has decreased from 80 % to 15 %, creating a coarse biosolids fertiliser material. Figure 4 below provides a photo of the inside of a facility similar to that proposed to be installed by the applicant and Figure 5 below provides a diagram of the similar facility.



Figure 4: Picture of an operating Solar Drying Facility similar to that proposed by the applicant

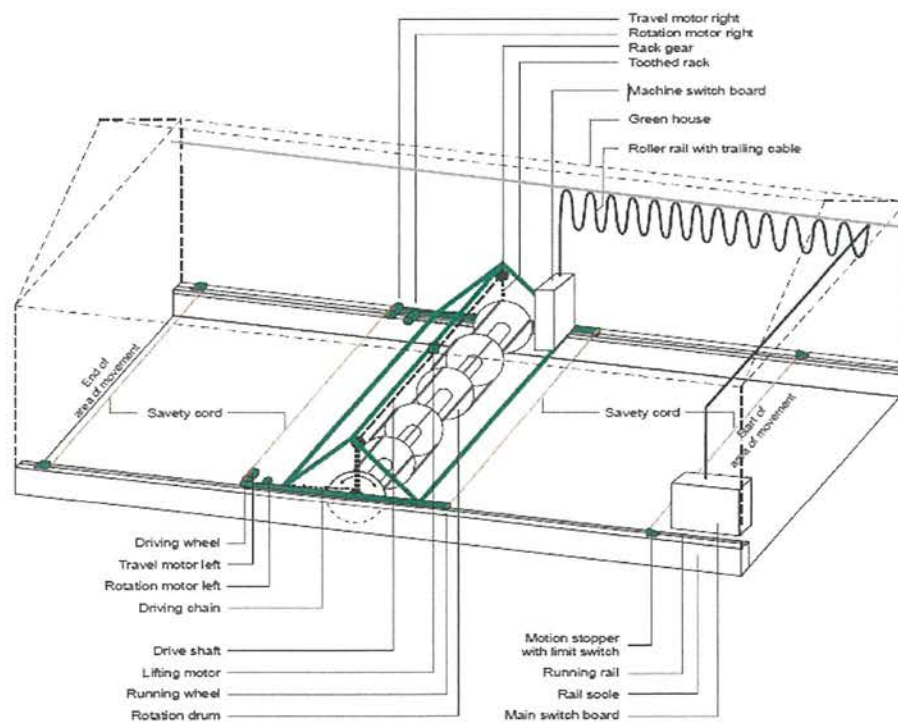


Figure 5: Diagram of facility similar to that proposed by the applicant

- 2.17 The facility will have one operator, and will be staffed between the hours of 7 am to 6 pm, five days per week. The application notes the facility maybe open weekends due to a break down or incident at the Wanaka Wastewater Treatment Plant, however it is envisioned that this would occur very infrequently, if at all.

Discharges to Air

- 2.18 The aerobic microbial breakdown of organic matter via secondary solids drying will produce emissions similar to other composting activities which include carbon dioxide, water vapour, heat and odorous volatile compounds such as dimethyl sulphide and hydrogen sulphide. Typically composting operations that maintain aerobic conditions tend to have an odour that is dominated by ammonia. More odorous discharges from composting operations occur when there are anaerobic conditions due to lack of oxygen, which is due to improper mixing and turning.
- 2.19 Discharges of odour from the applicants proposed activity will be from the mechanical vents along the roof of the facility. Discharges will also occur during the loading of the secondary biosolids into the facility which has been delivered from the Wanaka Wastewater Treatment Plant.

Background air quality

- 2.20 In the local area the following sources can contribute to the background air pollutant concentrations:
- Discharges of dust from the applicants quarry onsite and associated vehicle movements;
 - Nearby agricultural activities and outdoor burning;
 - Vehicle movements on the State Highway 8A and unsealed roads; and
 - Dust generation from exposed soils during windy conditions.
- 2.21 The likely background air quality at the site would be somewhere between that expected in a totally rural environment, and that experienced in a small rural centre.
- 2.22 In terms of other odour discharges in the area, these would be expected to occur from a variety of agricultural sources such as silage and offal pits, spreading of fertiliser, effluent irrigation on farm properties, stockyards, etc.

Sensitivity of the receiving environment

- 2.23 Different locations have different sensitivities to odour and can be classified as having high, moderate or low sensitivity. The degree of sensitivity to odour in any particular location is based on characteristics of the land use including the time of day and the reason why people are at the particular location (e.g. work, home living or recreation).
- 2.24 In 2002, Ministry for Environment (MfE) published technical report on the “state of the science” of odour measurement, assessment, and management in New Zealand (MfE, 2002). Following consultation with odour management professionals in New Zealand, this report was summarised into a good practice guide for odour assessment and management, entitled “*Good Practice Guide for Assessing and Managing Odour in New Zealand*” (MfE, 2003) (GPGAMO).

- 2.25 The GPGAMO discusses the relative sensitivity of a range of different land uses. The GPGAMO classifies the sensitivity of a “rural” receiving environment as being potentially either “high” or “low” depending on case specific circumstances. At dwellings on rural properties, residents can be adversely affected by non-rural type odours for the same reasons as people living in more intensely populated areas.
- 2.26 The applicant’s AEE and Specialist Report has identified the nearest dwelling, located approximately 850 m to the west of the proposed facility, and the next closet dwelling located 1 km northwest of the proposed facility as sensitive receptors for the purpose of the odour assessment.

Consultation

- 2.27 The applicant has undertaken consultation in the lead up to submitting the application. In summary the consultation included:
- Community meetings and consultation with neighbours of the applicant’s proposed facility;
 - The applicant has also sought from local Iwi, the Department of Conservation and Public Health South, prior to lodging the applications.

3. Status of the Application

- 3.1 Composting is defined in the Regional Plan: Waste for Otago (RPWaste) as the biological reduction of organic waste to a relatively stable product. As such the applicant’s proposal falls under the jurisdiction of this plan.
- 3.2 Rule 7.6.12 of the RPWaste outlines that discharges of any contaminant into or onto land; the discharge of any contaminant or water into water; or the discharge of any contaminant into air, when as the result of composting organic material is a *permitted activity* provided that:
- (a) Any excavation is dug in a manner so as to avoid groundwater seepage into the pit;
 - (b) The activity is not undertaken within 100 metres, horizontally, of a well used to provide water for domestic purposes or drinking water for livestock;
 - (c) Any leachate produced from compost does not enter any water body;
 - (d) The composting is not undertaken within 50 metres horizontally, of any river, lake, stream, pond, wetland or mean high water springs;
 - (e) The composting is undertaken on the property from which the majority of the material is sourced;
 - (f) The composting does not cause a nuisance and is not noxious, dangerous, offensive, or objectionable beyond the boundaries of the property.
- 3.3 The applicant is able to meet all the requirements of the above rule, except requirement (e), as the material (secondary biosolids) is sourced from the Wanaka Wastewater Treatment Plant.
- 3.4 The discharges to air from the applicant’s composting activity are therefore a *discretionary activity* in accordance with Rule 7.6.13 of the RPWaste.
- 3.5 Section 7.6.13.1 of the RPWaste states in considering any application under this rule, in addition to the matters listed in Section 104 of the Resource Management

Act, the Otago Regional Council will have regard to, but not be restricted by, the following matters:

- (a) The location of the composting relative to any water body, areas prone to erosion, inundation or subsidence, and areas of cultural, conservation or historic significance;
- (b) The adverse effects on land, water and air arising from any discharges;
- (c) The action that is to be taken to avoid, remedy or mitigate any adverse effects of any discharges; and
- (d) The monitoring programme to be implemented.

Permitted Activities

- 3.6 Discharges from miscellaneous activities at the applicants site, such as building and construction activities, general engineering activity is a ***permitted activity*** in accordance with Permitted Activity Rule 16.3.13.1 of the Regional Plan: Air for Otago (RPA).
- 3.7 The discharge of contaminants to air for the extraction of aggregates from the applicants current quarry onsite is a ***permitted activity*** in accordance with Permitted Activity Rule 16.3.5.3 of the RPA.

4. Notification and submissions

- 4.1. The applicant requested that the application was publically notified. Public notification of the application, along with the land use consent application before the QLDC occurred on 26 March 2014. The submission period for the application closed on 28 April 2014. A total of 8 submissions were received. Seven submissions were opposed to the application, with 1 submission in support of the application subject to conditions. Of the total 8 submissions, 6 wished to be heard at the hearing.
- 4.2. The opposing submitters are:
 - P R Gilchrist;
 - S Kane;
 - G Hastie and A Petic;
 - C Robson;
 - JH & TK Bird Holdings Limited;
 - G D Taylor; and
 - R Gilchrist
- 4.3. The opposing submissions raised concerns over discharges of odour and airborne pathogens, and the chosen location of the facility.
- 4.4. Public Health South submitted in support of the application, subject to conditions recommended by the applicant being included on the consent.
- 4.5. A total of 39 submissions were received on the application lodged with the QLDC, 36 of these submissions opposed the application, and 3 were in support.
- 4.6. It should be noted that a large number of the submissions received by the QLDC raised concerns over discharges to air from odour, pathogens and contaminated dust from the proposed facility, which along with the submissions before this Council, will be considered in this assessment.

- 4.7. The hearing is scheduled to be held in Wanaka on Wednesday 17th - Friday 19th of September 2014 (with additional hearing days on Monday 22th – Tuesday 23rd if required).

5. Assessment of Environmental Effects

- 5.1 When considering an application for resource consent, the Council must have regard to Part 2 of the Act (Purpose and Principles - Sections 5 to 8), and Sections 104, 104A to 104D and 105 of the Act.
- 5.2 The applicant's assessment of effects follows the GPGAMO, which is considered appropriate.
- 5.3 The assessment has been prepared by a suitably qualified expert and the author of this report accepts the assessment.

Assessment Criteria for the Discharge of Odour

- 5.4 The GPGAMO outlines a nationally consistent approach to assessing and managing odours in New Zealand.
- 5.5 Odour is an entirely subjective issue and needs to be assessed in a qualitative way. The frequency, intensity, duration and offensiveness of the odour, known as FIDOL factors listed Table 1 below, need to be taken into account along with the sensitivity of the receiving environment.

Table 1: Description of FIDOL factors, (GPGAMO)

| | |
|-------------------------|---|
| Frequency | How often an individual is exposed to odour |
| Intensity | The strength of the odour |
| Duration | The length of a particular odour event |
| Offensiveness/character | The character relates to the 'hedonic tone' of the odour, which may be pleasant, neutral or unpleasant. |
| Location | The type of land use and the nature of human activities in the vicinity of an odour source. |

- 5.6 The applicant has used several odour assessment tools recommended in the GPGAMO which include:
- Past experience with the same activity having similar controls at other locations;
 - Wind patterns,
 - Experience and buffer distances criteria;
 - Review of management and operation (best practicable options).
- 5.7 In some cases dispersion modelling is used to assess the effects of a discharge to air activity. However, the applicant has not included dispersion in its assessment. This was queried in the request for further information by the Council's Staff, and the applicant responded emphasising that the GPGAMO advises that modelling can be difficult where odour emission rate data is not readily available, or the use of data from another site cannot be readily be transferred or easy to justify.
- 5.8 The applicant discussed that GPDAMO states that for new activities conservative assumptions are often required in the modelling, and in some circumstances it may not be appropriate to model at all because of the lack of justifiable data for the model. In these circumstances the assessment should rely on experience

from other sites in conjunction with site-specific considerations and proposed mitigation measures. This in turn will provide an indication of FIDOL factors.

- 5.9 In consideration of these factors, the Council Staff accept that modelling is not suitable in this instance.

Relevant Guidelines for Buffer Distances

- 5.10 The Specialist Report includes a review of international recommended buffer distances for sewerage treatment and subsequent waste management processes. This is outlined in Table 2 below.

Table 2: Published recommended separation distances from dwellings for comparable odour generating activities from Australia and Canada

| Guidance Source | Odour Generating Activity | Recommended Buffer Distance to Dwellings or Residential Areas |
|--|--|---|
| South Australia EPA Biosolids Guidelines 1997 ² | Storage and drying of biosolids | 400m (consider impact of prevailing wind) |
| | Application of liquid biosolids to agricultural land | 400m |
| Western Australia EPA Buffer Distances 2005 ³ | Composting of uncovered biosolids in windrows | 500m |
| | Composting of biosolids in outdoor covered windrows with continuous aeration | 250m |
| South Australia EPA Guidelines for Separation Distances 2007 ⁴ | Biosolids depot | 400m |
| | Sewage treatment works (population < 15,000) | 300m |
| Ministry of Ontario Environmental Design Guidelines for Sewage Works 2008 ⁵ | Sewage treatment works (< 25,000m ³ /day capacity) | 150m |
| Victoria EPA Buffer Distances 1990 ⁶ | Sewage treatment works (population < 20,000) | 300m |
| | Treatment of organic waste | 500m |

² South Australia Environment Protection Authority. 1997. South Australian Biosolids Guidelines for the Safe Handling, Reuse or Disposal of Biosolids. June 1997.

³ Western Australia Environment Protection Authority. 2005. Guidance for the Assessment of Environmental Factors: Separation Distances Between Industrial and Sensitive Land Uses. June 2005.

⁴ South Australia Environment Protection Authority. 2007. Guidelines for Separation Distances. December 2007.

⁵ Ontario Ministry of the Environment. 2008. Design Guidelines for Sewage Works 2008.

⁶ Victoria Environment Protection Authority, 1990. Recommended Buffer Distances for Industrial Residual Air Emissions. July 1990.

- 5.11 The Specialist Report goes on to note that the guidance above will generally be conservative, as site specific factors, such as wind direction are not taken into account. The applicant notes that solar drying of secondary solids is not listed in the table above, but it does provide an indication of recommended buffer distances for conventional secondary solids drying.

- 5.12 The Western Australia EPA recommends a buffer distance to the nearest dwelling of 500 m for the composting of biosolids of uncovered windrows, and 250 m for covered windrows with continuous aeration. For other sources of odours from waste management plants (including very large scale plants serving populations of 20,000 people) the maximum recommended buffer is up to 500

m. In the case of this application the nearest sensitive receptor is 850 m away (and for the majority of time up wind) from the proposed discharge.

Other Solar Drying Facilities

- 5.13 The applicant has produced information from the facilities manufacturer, and noted that over 80 similar facilities are operating throughout the world, particularly in Europe, with the first being commissioned in 1998 and as such, substantial experience has been applied to ensure discharges of odour are kept to a minimum. The manufacturers of these facilities have reported that no odour issues arise, as the secondary solids are continually aerated and any potential odour causing compounds are oxidised.
- 5.14 Three facilities are also operating in Australia, one of which has been visited by the applicant's staff who noted very little odour was generated from the facilities.
- 5.15 During the processing of the application, the applicant advised that a similar facility is operating in the Selwyn District, Canterbury that dries sludge from the Pines Wastewater Treatment Plant which services a population on approximately 10,700 people in the area including the town of Rolleston. The plant and associated solar drier are operating under resource consents issued by Environment Canterbury (ECan).
- 5.16 The author of this report has obtained the compliance monitoring report for discharges to air from the facility, which has identified no odour issues or non compliance. No complaints have been received with regard to the operation of the facility, and the facility remains fully compliant in regards to the discharge to air permit. Figure 6 below provides a photo of the facility in the Selwyn District.



Figure 6: Photo of inside the Selwyn District Secondary Solids Drying Facility

- 5.17 The author of this report has also contacted the relevant Compliance Officer at ECan to discuss odour discharges from the Selwyn Facility. The officer discussed that they visit the facility 4 times a year, for compliance auditing and explained that the facility emits very little odours, and on most occasions odours could not be detected 20 m away from the facility. On the last visit to the facility in July 2014, the officer noted it was a cold, cloudy and wet day, and no odours were detected. The officer also advised that the facility had been operating for over a year, and from the outset the plant was well managed with no commissioning issues. The author of this report queried whether the facility had any artificial heating, and it was confirmed that it did not, and on occasions the inside of the glasshouse was as cool as 3 degrees Celsius. On conclusion, the officer noted in their experience no odours from the facility have been considered offensive or objectionable, and no odour has been detected outside the facility boundary.

Discussion of Effects of Odour

The Councils Resource Science Unit Review

- 5.18 The Councils Resource Science Unit (RSU) has reviewed the application, and compared the simulated climate data used by the applicant in the analysis for the facilities design to actual climate data from stations located near the proposed facility and this was found to be acceptable. The RSU noted that larger facilities in other countries sometimes use additional heating for drying, however, in the case of the proposed facility the volumes of secondary biosolids proposed to be dried are relatively small and according to the sludge balance analysis, it is reasonable to assume that solar radiation with additional ventilation will achieve adequate evaporation.
- 5.19 No odours should be apparent past the boundary if the facility is properly operated. The RSU noted the applicant plans to transport biosolids from the Wanaka Wastewater Treatment Plant in covered trucks; the biosolids will be offloaded once inside the facility; and the biosolids will be constantly aerated using an automated turning arm. No biosolids will be stockpiled on-site at either the input or output; these are points at which odour can occur due to the formation of anaerobic conditions.
- 5.20 During its review, the RSU also had discussions with the Treatment Planning Engineer overseeing the operation of similar solar drying facilities in Victoria, Australia. According to the Treatment Planning Engineer, a key element in the proper functioning of such a facility is the percentage of volatile solids (% VS) in the incoming biosolids. The Treatment Planning Engineer in his experience advised it should be no more than 70 % to avoid the risk of odour emanating from the facility. The % VS is controlled at the wastewater treatment plant before the biosolids is transported. Preliminary tests done by applicant indicate the % VS from the Wanaka Wastewater Treatment Plant is at 84 %, a rather high value that indicates some odour from the facility may be a risk. The RSU recommended that this is a factor that needs to be addressed and resolved.
- 5.21 It is also noted that in Appendix 5 of the application the percent of volatile solids is reported typically from treated dewatered secondary biosolids to range from 65-68%.

- 5.22 Odour modelling was not performed for the facility as robust emission values are not available. From discussions with the Treatment Planning Engineer and with personnel at ECan who regulate a similar facility at Selwyn, odour outside their buildings is non-existent. As there may be large errors associated with odour modelling, the RSU accepts that modelling results may not be as helpful as monitoring results.
- 5.23 The RSU concluded that odour can be managed to ensure that discharges to air have less than minor effects providing.
- That limits be placed on incoming amounts of biosolids meet the design criteria.
 - That a limit of no greater than 70 % VS be placed on incoming biosolids; this should be routinely tested at the WWTP before departure.
 - That the applicant performs routine and regular odour monitoring around the plant and this information submitted to the Council for review.
 - That a meteorology site be established at the facility which measures, at the least, the following: air temperature, solar radiation, wind speed and direction, and relative humidity.
 - That a complaints database is kept which should include the weather data at the time of the complaint.
 - No stockpiling of any kind should be allowed on-site.
 - That a robust odour management plan is submitted and reviewed annually. Community liaising should be a part of that plan.

Frequency, Intensity and Duration

- 5.24 Frequency is how often an individual is exposed to odour in the ambient environment. This is influenced by the odour source and characteristics, wind conditions, topography and location of the source in relation to affected individuals. The intensity of odour refers to an individual's perception of its strength. Duration is related to the type of odour source, the meteorology and the location of the odour source.
- 5.25 The wind rose from the nearby Wanaka Airport shows that winds in the area are predominantly westerly, and are unlikely to carry odours towards the nearest sensitive receptors, surrounding industry or the town of Luggate. Winds blowing towards the nearest sensitive receptor (the dwelling located 850 m away on Church Road) are rare.
- 5.26 People travelling on the highway to the north of the site will not experience a high frequency of odour discharges, as they will be in their cars, and will pass the site in a short time.
- 5.27 In light of this information, and the large buffer distances from the proposed facility it is expected that the frequency of any individual experiencing odour from the proposed facility to be very low.
- 5.28 In terms of intensity, providing secondary biosolids do not have a high percentage of VS, are not stockpiled on site prior to drying, and will be maintained in an aerobic state, the strength of the odour will be low and similar to other manure type odours generated in the rural environment.

- 5.29 Potential odour discharges from facilities such as that proposed by the applicant may only occur beyond the boundary during the unloading of secondary biosolids into the drying area. The applicant expects this will only occur up to 4 times per day, for up to 15 minutes each time. As such the duration of odour effect will be short.

Offensiveness

- 5.30 Offensiveness is the subjective rating of pleasantness or unpleasantness of an odour. As stated, the odour characteristics of the proposed activity are likely to be consistent with odour from other agricultural operations on adjoining farmland.

Location

- 5.31 Location is an essential factor when assessing the likelihood of adverse effects from odours. It accounts for the type of area in which a potentially affected person lives, the type of activity they are engaged in, and the sensitivity of the receiving environment.

- 5.32 The proposed facility is to be located in a rural area, away from residential homes. The sensitivity of the receiving environment can generally be determined by land use. Rural areas are expected to have low sensitivity as people living and visiting rural areas generally have a high tolerance for rural-type odours, which are acceptable to most rural people and fit the description of a rural odour in a rural environment. The applicant is proposing to continually aerate the secondary solids, which will mitigate the potential for offensive or objectionable odours beyond the boundary.

Conclusion of Effects of Odour

In light of the expected odour discharge from the facility, the Council's RSU assessment and the FIDOL factors, it is expected that the discharges of odour from the facility can be effectively avoided remedied or mitigated, through conditions of consent, to ensure adverse effects do not occur beyond the applicant's boundary.

Effects on Health

- 5.33 Several of the submissions in opposition raised concerns over the potential for airborne pathogens and dust from the secondary biosolids drying process to cause an adverse effect on public health.
- 5.34 The application provided literature on the reduction of pathogens numbers (namely faecal coliforms and E. Coli), as the sludge is dewatered through the drying process. The information concluded that pathogen die off occurred with increasing solids content (as dewatering increased, as the solids moved along the facilities floor). Die off occurred to the extent that concentrations of pathogens were below detection levels. In order to meet New Zealand Biosolids guidelines (Aa), the dried product must meet strict requirements in terms of contaminant concentrations prior to use.
- 5.35 The facility is entirely covered and the potential for wind blown solids to escape the facility will be very low. Pathogens cannot travel via evaporated water out of the facility. No discharges to land or water will occur directly from the facility.

- 5.36 Public Health South has submitted in support of the application providing conditions in the application are recommended as conditions of consent.
- 5.37 It should also be noted, under Permitted Activity Rule 16.3.7.1 of the Regional Plan Air for Otago, the discharge to air associated with land application of treated effluent and biosolids (which has not been dried and may have high concentrations of pathogens) from municipal, industrial or trade waste can be undertaken on any site providing certain requirements are met. These include being 150 m from a dwelling, 20 m from a public road, and 150 m from any public amenity area
- 5.38 In light of the above it is considered that adverse effects on health are unlikely to occur.

Effects on Cultural, Spiritual and Historic Values

- 5.39 Kai Tahu were given the opportunity to submit on the application, and chose not to make a submission. In light of this, the Council considers that effects on cultural and spiritual values from the activity will be less than minor.
- 5.40 New Zealand Historic Places Trust also chose not to make a submission. As such effects on historic values are also considered to be less than minor.

Cumulative Effects

- 5.41 In terms of discharges of odours, they are expected to be less than minor, and will not cause a cumulative effect in combination with neighbouring discharges to air from any surrounding rural activities.

Consideration of Alternatives

- 5.42 The applicant was asked to consider alternatives to the discharge to air from the proposed site, in particular consideration to locating the proposed facility at the Wanaka Wastewater Treatment Plant (essentially resulting in a permitted activity in terms of the composting activity).
- 5.43 The applicant noted that the proposed location of the facility was chosen as it owns the site. The only other land owned by the applicant suitable for the proposed facility is at the Parkburn Quarry. Positioning the facility at Parkburn Quarry was dismissed due to the increased cartage costs and the quarry being outside of the Queenstown Lakes District.
- 5.44 The applicant also does not own land at or in close proximity to the Wanaka Wastewater Treatment Plant.
- 5.45 The area near the Wanaka Wastewater Treatment Plant is also within the Wanaka Airport Zone. The height restrictions within the Wanaka Airport Zone would mean the facility would not be appropriate for drying the material as it would need to be dug into the ground and the glass would not effectively allow the sunlight to reach the secondary solids. The proposed facility being essentially a large glass house could also cause aviation safety hazards.
- 5.46 As such the applicant believes the current location is suitable for the proposal, taking into account the effects of the discharge, and the distance to sensitive receptors.

6. Statutory Considerations

- 6.1 Part 2 of the Act, the purpose and principles, is set out in Sections 5 to 8 of the Act. Section 5 states that the purpose of the Act is to “to promote the sustainable management of natural and physical resources”. Sustainable management has two facets. The first aspect is “managing the use, development and protection of natural and physical resources in a way, or at a rate which enables people and communities to provide for their social, economic and cultural well being and for their health and safety”. In this respect, the concept of sustainable management is permissive. The purpose of the Act is achieved by allowing activities that benefit people.
- 6.2 However, there is another aspect to sustainable management. The use, development and protection of resources is only allowed while:
- (a) *“sustaining the potential of natural and physical resources, (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
 - (b) *safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*
 - (c) *avoiding, remedying, or mitigating any adverse effects of activities on the environment.”*
- 6.3 The discharge of odour to air will allow the applicant to treat waste in a sustainable manner. If the activity is carried out in combination with the recommended conditions of consent discussed in Section 7 of this report below, the life-supporting capacity of air, water, soil and ecosystems will be safeguarded. The Council considers that effects on cultural, spiritual and amenity values will be less than minor.
- 6.4 There are no matters of national importance as given in Section 6 of the Act that may be affected by the proposed activity.
- 6.5 Section 7 requires persons acting under the Act in relation to managing the use, development, and protection of natural and physical resources, to have particular regard to the following matters.
- (a) *Kaitiakitanga:*
 - (aa) *The ethic of stewardship:*
 - (b) *The efficient use and development of natural and physical resources:*
 - (ba) *The efficiency of the end use of energy:*
 - (c) *The maintenance and enhancement of amenity values:*
 - (d) *Intrinsic values of ecosystems:*
 - (f) *Maintenance and enhancement of the quality of the environment;*
 - (g) *Any finite characteristics of natural and physical resources:*
 - (h) *The protection of the habitat of trout and salmon:*
 - (i) *The effects of climate change:*
 - (j) *The benefits to be derived from the use and development of renewable energy.*
- 6.6 Of particular regard to this application are kaitiakitanga, the efficient use and development of natural and physical resources, the maintenance and enhancement of amenity values, and the maintenance and enhancement of the quality of the environment. Kai Tahu were served notice of the application and chose not to make a submission.

- 6.7 In terms of the odour discharge, subject to recommended conditions, the proposed activity, should maintain any amenity values surrounding the site.
- 6.8 Section 8 requires all persons acting under the Act to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). It is not considered that these applications are contrary to the principles of the Treaty of Waitangi.
- 6.9 Overall, the application is considered to be consistent with Part 2 of the Act.

Section 104(1)

- 6.10 The matters of Section 104(1) to be considered when assessing an application for a resource consent are as follows:
- (a) *any actual and potential effects on the environment of allowing the activity; and*
 - (b) *any relevant provisions of—*
 - (i) *a national environmental standard;*
 - (ii) *other regulations;*
 - (iii) *a national policy statement;*
 - (iv) *a New Zealand coastal policy statement;*
 - (v) *a regional policy statement or proposed regional policy statement;*
 - (vi) *a plan or proposed plan; and*
 - (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

- 6.11 These matters are discussed in the following sections.

Environmental Effects

- 6.12 The actual and potential environmental effects of the proposed activity were considered in Section 5 of this report. Recommended conditions of consent discussed in Section 7 below will ensure that any adverse effects on human and ecosystem health are avoided, remedied or mitigated.

Regional Policy Statement

- 6.13 The Regional Policy Statement for Otago (RPS) provides an overview of the resource management issues of the Otago Region and the ways of achieving the integrated management of its natural and physical resources. The provisions of Section 7 (Air) and Section 13 (Wastes and Hazardous Substances) of the RPS are relevant to this application.
- 6.14 The objective (7.4.1) of the RPS is to maintain and enhance Otago's existing air quality, including visual appearance and odour. Relevant policies to achieve this objective are:

7.5.1 To recognise and provide for the relationship Kai Tahu have with the air resource in Otago.

7.5.2 To avoid, remedy or mitigate any discharges which have adverse effects on the air resource including effects on human health, the environment, visual impacts and odour.

- 6.15 Kai Tahu was served notice of the application.

- 6.16 The objectives 13.4.2 and 13.4.3 of the RPS seek to encourage the reduction of the amount, range and type of waste generated in Otago, and also encourages the reuse, recycling and recovery of wastes. The relevant policy to achieve this is:

13.5.9 To minimise the amount of waste generated at source in Otago and to maximise the opportunities for the reuse, recycling and recovery of materials from the waste stream through promoting and encouraging:

- (a) A reduction in the quantity of material entering the waste stream; and*
- (b) Material and products that are reusable and the recycling of material and substances that cannot be reused; and*
- (c) The recovery of resources from materials in the waste stream.*

- 6.17 In considering the discharge of odour from the site, and that the proposal seeks to maximise an opportunity for reuse of material from the waste stream, it is considered that the application is consistent with the relevant policies of the RPS.

Regional Plan: Waste for Otago

- 6.18 The RPWaste has issues, objectives and policies that address waste management issues.
- 6.19 The following policies from the RPWaste are relevant with regard to waste minimisation:

4.4.4 To encourage the composting of appropriate organic waste material

- 6.20 The applicant seeks to compost a waste material, rather than it being disposed of at a landfill, thereby minimising a waste material.
- 6.21 The following policies from the RPWaste are relevant to this application with regard to discharges to air:

7.2.8 Discharges from composting of organic material and silage production can give rise to adverse effects

7.4.1 To recognise and provide for the relationship Kai Tahu have with Otago's natural and physical resources through:

- (a) Providing for the management and disposal of Otago's wastes in a manner that takes into account Kai Tahu cultural values; and*
- (b) Supporting waste disposal methods which avoid, remedy or mitigate adverse effects on the environment and the mauri of its natural and physical resources; and*
- (c) Protecting waahi tapu and waahi taoka from waste management practices; and*
- (d) Ensuring that Kai Tahu access to waahi tapu and waahi taoka is not compromised by waste management practices; and*
- (e) Acknowledging that future generations will inherit the results of good and bad waste management practices; and*
- (f) Maintaining consultation with Kai Tahu on issues relating to landfill management.*

- 6.22 The activity will be carried out in a way that will not give rise to adverse effects. The proposal will not affect the Kai Tahu values above.

7.4.3 To ensure that landfills and discharges from silage production and composting operation are sited at location and managed in a manner whereby adverse effects on the environment are avoided, remedied or mitigated

- 6.23 The applicant's composting operation is sited in an appropriate location, and will be managed to ensure adverse effects on the environment are avoided.

7.4.4 To monitor discharges to land, water, and air from new, operating and closed landfills, and from silage production and composting.

- 6.24 The applicant will monitor discharges from its composting operation to ensure that adverse odour discharges will not occur.

7.4.8 To promote alternatives to landfills as a means of waste disposal

- 6.25 The applicant proposes to dry secondary biosolids for a potential beneficial use, rather than the biosolids being disposed of at a landfill.

- 6.26 It is considered that the application is consistent with the relevant policies of the RPWaste in regards to discharges to air from composting.

Regional Plan: Air for Otago

- 6.27 Landfill issue 7.2.8 of the RPWaste notes that odour can be a problem, but due to the complex nature of discharges to air means that detailed standards relating to such discharges will be subject to the provisions if the Regional Plan Air for Otago (RPA). The RPA has issues, objectives and policies that address air quality and management issues. The following policies from the RPA are relevant to this application:

7.1.1 To recognise and provide for the relationship Kai Tahu have with the air resource through procedures that enable Kai Tahu to participate in management of the air resource.

- 6.28 Kai Tahu was formally notified of the application, and have not made a submission.

8.2.3 In the consideration of any application to discharge contaminants into air, Council will have:

(a) Particular regard to avoiding adverse effects including cumulative effects on:

- (i) Values of significance to Kai Tahu;*
- (ii) The health and functioning of ecosystems, plants and animals;*
- (iii) Cultural, heritage and amenity values; and*
- (iv) Human health; and*

(b) Regard to any existing discharge from the site, into air, and its effects.

- 6.29 Regard to amenity values, ecosystem and human health has been given in Section 5 of this report.

8.2.4 *The duration of any permit issued to discharge contaminants into air will be determined having regard to:*

- (a) The mass and nature of the discharge;*
- (b) The nature and sensitivity of the receiving environment; and*
- (c) Any existing discharge from the site, into air, and its effects.*

6.30 The applicant has sought a term of 35 years for the consent. Having regard to (a), (b) and (c) above and consent conditions recommended, an appropriate term of consent is discussed in Section 8 of this report.

8.2.5 *To require, as appropriate, that provision be made for review of the conditions of any resource consent to discharge contaminants into air.*

6.31 Recommended conditions of consent discussed below do include a provision for the review of conditions of consent.

11.1.1 *To avoid or mitigate any adverse effects on human health or amenity values resulting from the discharge of offensive or objectionable odour through the use of:*

- (a) Good management practices (including the use of codes of practice) and process technology that has an inherently low odour potential to ensure the amount of odorous contaminants generated by a process or activity is minimised;*
- (b) Appropriate control technologies to reduce the emission of odorous contaminants;*

6.32 Discharges of odour have been considered in Section 5 of this report. The applicant proposes good management practices to reduce odour effects.

Other Matters

Kai Tahu ki Otago Natural Resource Management Plan (2005)

6.33 The Kai Tahu ki Otago Natural Resource Management Plan (2005) contains the following objectives and policies of relevance to this application:

- To require monitoring of all discharges to be undertaken;
- To encourage management plans for all discharge activities;
- To require all discharge systems to be well maintained and regularly serviced; and
- To require cultural assessments for any discharges to air.

6.34 Recommended conditions of consent, include monitoring of the discharges, a management plan, and require the equipment to be well maintained and serviced. No cultural assessment has been undertaken for this proposal. Kai Tahu have not submitted on the application.

Section 104(E) of the Act

6.35 If an application is for a discharge permit to do something that would otherwise contravene Section 15 or Section 15B, the Consent Authority must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases. In this application, no regard has been

given to the effects of the discharges on climate change, as renewable energy is not utilised by the applicant.

Section 105(1) of the Act

6.36 If an application is for a discharge permit to do something that would otherwise contravene Section 15 or Section 15B, the Consent Authority must, in addition to the matters in Section 104(1), have regard to –

- (a) *the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
- (b) *the applicant's reasons for the proposed choice; and*
- (c) *any possible alternative methods of discharge, including discharge into any other receiving environment.*

6.37 Section 105 matters have been considered in Section 5 of this report.

7. Recommendations

7.1 That the Hearing Panel grants Fulton Hogan Limited, Discharge Permit RM13.474.01 subject to the term and conditions set out in the attached draft consent, which are discussed below.

Recommended consent conditions

7.2 The Specialist Report contained 9 recommended conditions of consent, some of which have been incorporated as recommended conditions of consent.

7.3 A condition is included that will require the applicant to undertake the activity in accordance with the application. Conditions will require the facility to be sized and located as outlined, and deliveries of secondary biosolids shall be no more than 4 tonnes per day, as per outlined in the application.

7.4 To ensure secondary biosolids delivered to the plant do not cause adverse odours, a condition is included that puts a volatile solids limit of 70 % on the incoming secondary solids, to ensure adverse discharges beyond the boundary do not occur.

7.5 A condition is recommended to ensure no stockpiling of secondary biosolids shall not occur.

7.6 The secondary biosolids in the facility shall be continuously mechanically turned, and ventilated to avoid anaerobic conditions.

7.7 Complaints shall be recorded, along with measures to rectify the cause of the complaint.

7.8 To help identify causes of complaints, the consent holder shall ensure that meteorological monitoring equipment is installed at the facility and wind speed, wind direction, solar radiation, relative humidity and temperature are recorded.

7.9 The applicant has provided a draft management plan for the facility. A recommended condition of consent is included requiring an odour management plan to be developed by the applicant. The odour management plan will require the best practicable options to insure that the applicant's equipment and on site

process are in good working order, and that discharges of odour are kept to a practicable minimum.

- 7.10 To ensure no discharges are noxious, offensive, dangerous or objectionable at the applicant's boundary, a condition is also recommended to reflect this.
- 7.11 The consent, if granted, should also include standard conditions related to record keeping and reporting.
- 7.12 A review condition is also included to enable a review of consent conditions should adverse effects arise over the term of consent recommended.

Reasons for recommendation

- 7.13 The adverse effects of the discharge to air can be adequately addressed through the recommended conditions of consent attached to this report.
- 7.14 That the proposed activity is consistent with the requirements of the Act and the Council's policies, subject to recommended conditions of consent.

8. Term

- 8.1 The applicant has applied for a 35 year term of consent. The Act limits the term of consent for any activity that would otherwise breach Section 15 of the Act to a maximum of 35 years.
- 8.2 In light of the low level of effects expected by the activity, if undertaken in combination with the recommended conditions of consent, a long term of consent is recommended.
- 8.3 Should the Hearing Panel grant the application, it is recommended that consent be granted for a 35 year term, subject to the recommended conditions of consent attached.



Fraser McRae

Director Policy, Planning and Resource Management

Our reference: A669454

Consent No. RM13.474.01

DISCHARGE PERMIT

Pursuant to Section 104B of the Resource Management Act 1991, the Otago Regional Council grants consent to:

Name: Fulton Hogan Central Limited

Address: 11 Main Rd, Fairfield, Green Island, New Zealand

To discharge contaminants, namely odour, to air for the purpose of operating a solar drying facility

For a term expiring 4 September 2049

Location of consent activity: Luggate, approximately 575 metres west southwest of the intersection of McKay Road and Luggate-Tarras Road (State Highway 8A)

Legal description of consent location: Lot 2 DP 341373

Map Reference: NZTM 2000 E1306130 N5039786

Conditions

Specific

1. The discharge shall only be as described in the consent application lodged with the Consent Authority on 4 March 2014. If there are any inconsistencies between the application and this consent, the conditions of this consent shall prevail.
2. The solar drying facility shall be generally sized and located as outlined in the plan attached as Appendix 1 to this consent.
3. A maximum of 4 truck deliveries totaling no more than 4 tonnes of secondary biosolids shall occur in a single day.
4. Any secondary biosolids received at the site:
 - (a) Shall have a volatile solids percentage no greater than 70 %; and
 - (b) Shall not be in a state that could cause an offensive or objectionable discharge to air at or beyond the property boundary to the extent that it causes an adverse effect in the opinion of an authorised officer of the Consent Authority.

5. Secondary biosolids shall not be stored outside the solar drying facility.
6. Secondary biosolids held within the drying facility shall be maintained in an aerobic condition by mechanical turning and ventilation in order to minimise odour emissions.

Performance Monitoring

7. The consent holder shall maintain and update a management plan for the management of odour from the solar drying facility. This shall be submitted to the Consent Authority one month prior to the first delivery of secondary biosolids. The Management Plan shall be revised annually and the consent holder shall ensure the Consent Authority has the most up to date copy at all times. The Management Plan shall include all measures necessary to achieve compliance with the conditions of this consent but not be limited to the following:
 - (a) Details of the best practicable options to prevent or minimise odour from the site;
 - (b) A full description of the facility;
 - (c) A site map showing the location of each discharge point at the facility;
 - (d) An operating and maintenance plan for the facility;
 - (e) Methods to accurately record all odour complaints received as a result of the operation of the facility. A copy of all complaints must be made available to the Consent Authority for audits and upon request;
 - (f) Annual community liaison for community feedback on any odour issues; and
 - (e) Assignment of responsibility for implementing and updating the plan and contact details for these people.
8. The consent holder shall maintain a record of any complaints received regarding the solar drying facility operation. The register shall include, but not be limited to:
 - (a) name and location of site where the problem is experienced;
 - (b) nature of the problem;
 - (c) date and time problem occurred, and when reported;
 - (d) action taken by consent holder to remedy the situation and any policies or methods put in place to avoid or mitigate the problem occurring again.
 - (e) the weather conditions at the time of complaint which are measured in accordance with Condition 10.A record of the complaint(s) shall be submitted to the Consent Authority as soon as practicable after a complaint is received, on request and by 1 July each year.
9. The consent holder shall inspect the site boundary at least once each day from Monday to Friday and record any detected odour, the character and intensity of such odour and any known cause. A record of this shall be kept and made available to the Consent Authority on request.
10. Prior to receiving secondary solids at the solar drying facility the consent holder shall begin continuous monitoring recording of wind speed, wind direction, solar radiation, relative humidity and temperature. The meteorological monitoring shall take place at a location on or as close as practicable to the

consent holder's solar drying facility, and shall conform to Australian Standard AS 2922 as far as possible. A data logger shall be installed at the meteorological station and shall be downloaded every three months and at any other time at the request of the Consent Authority. The monitoring shall be undertaken in accordance with the recommendations in the 'Good Practice Guide for Air Quality Monitoring and Data Management' prepared by the Ministry for the Environment, 2009 and shall continue for term of this consent.

General

11. There shall be no odour or particulate emissions resulting from the exercise of this consent that are offensive or objectionable at or beyond the property boundary to the extent that it causes an adverse effect in the opinion of an authorised officer of the Consent Authority.
12. The consent holder shall notify the Consent Authority as soon as practicable of any plant malfunction or breakdown that results in an abnormal discharge. The consent holder shall ensure that any malfunctions in control systems are repaired as soon as possible.

Review

13. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent within three months of each anniversary of the commencement of this consent for the purpose of:
 - (a) Determining whether the conditions of this permit are adequate to deal with any adverse effect on the environment which may arise from the exercise of the permit and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the permit; or
 - (b) Ensuring the conditions of this consent are consistent with any National Environmental Standards; or
 - (c) Requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment arising as a result of the exercise of this permit.

Notes to Consent Holder

1. *If you require a replacement permit upon the expiry date of this permit, any new application should be lodged at least 6 months prior to the expiry date of this permit. Applying at least 6 months before the expiry date may enable you to continue to exercise this consent until a decision is made, and any appeals are resolved, on the replacement application.*

Issued at Dunedin this day of

Appendix 1 Location of Solar Drying Facility on Lot 2 DP 341373



ISO9001 Certified

btw south
 SURVEYING, ENGINEERING AND EPC SERVICES



FULTON HOGAN
 CONSULTANTS

SLUDGE DRYING FACILITY
 LUGGATE QUARRY