OTAGO REGIONAL COUNCIL

IN THE MATTER OF	the Resource Management Act 1991
AND	
IN THE MATTER OF	an application by the Alliance Group Limited for resource consent to discharge contaminants to air in respect of operation of the Pukeuri Meat Processing and Export Plant, Oamaru

Decision on Discharge Permit Application 2009.424

Hearing Panel: Commissioner Kevin Rolfe

Councillor Gretchen Robertson

Councillor Sam Neill

Kevin Rolfe
Chair

Date: 1 November 2011

1. Introduction

Alliance Group Limited (the applicant) has made application to the Otago Regional Council seeking consent to discharge contaminants to air from their Meat Processing and Export Plant at Pukeuri, Oamaru. The plant was established in 1914 and was acquired by the applicant in 1948.

The primary activities undertaken on the site are the processing of lambs, sheep, calves, cattle and deer. The application lists the following as operations that discharge contaminants to air and have the potential to cause adverse effects beyond the site:

- the reception and holding of stock prior to processing;
- the primary processing of meat for export and local sale;
- the rendering of animal material otherwise not suitable for human consumption;
- skin processing, including salting, fellmongering, production of pickled pelts, etc;
- wool washing and drying;
- operation of three coal-fired boilers;
- wastewater treatment and disposal;
- land application of biosolids; and
- composting.

All of those operations are included in the application.

There is also a landfill for industrial solid waste which is authorised by separate consents and is not included in the application.

2. Discharges to Air

The principal discharges of contaminants to air from the activities are particulate matter and sulphur dioxide from the coal-fired boilers and odour from the stockyards, the rendering plant, skin processing, wastewater treatment and disposal, land application of biosolids, and composting.

A blend of sub-bituminous coal is combusted at the coal-fired boilers, and the contaminants are discharged from a single 40m high stack. Boiler 1 has a horizontal multicyclone for particulate matter collection, whereas Boilers 3 and 4 each have vertical multicyclones. Emission testing for total suspended particulates has been carried out every two years. Sulphur dioxide discharges have been estimated from the fuel burning rate, the sulphur content of the coal (1.4% by weight) and an assumption that 5% of the sulphur is retained in the ash.

Gases from the I-well cookers and the blood drier at the rendering plant are discharged from the boiler stack. The applicant has identified as the three most significant sources of odour as: a wastewater stream from skin processing, the main DAF (dissolved air flotation) wastewater treatment facility, and a reception bin for off-site material for rendering.

3. Application Details

The application seeks to replace Discharge Permit 98390 issued by the Otago Regional Council, which expired on 30 April 2010. The application was made on 23 October 2009. As this is more than 6 months prior to the expiry of Discharge Permit 98390, the applicant is able to continue to operate under that permit, as provided for in Section 124 of the Resource Management Act (the Act), until the outcome of this application is known.

Table 1 provides a summary of the status of the application in terms of Rules in the Regional Plan: Air (RPA) and the Regional Plan: Waste (RPW).

Table 1: Status of Application in relation to Regional Plans

Activity	**Regional Plan Rule(s)**	**Activity Status**
Processing of animal matter	16.3.5.1 and 16.3.5.9 of the RPA	Discretionary
Transfer, storage, treatment and disposal of wastewater and application of biosolids to land	16.3.7.1 and 16.3.7.3 of the RPA	Discretionary
Discharges from the fuel burning equipment	16.3.4.1 and 16.3.4.3 of the RPA	Discretionary
Discharges of PM_{10} prior to 1 September 2013	16.3.15.4 of the RPA	Discretionary
Discharges of PM_{10} after 31 August 2013	16.3.15.5 of the RPA	Discretionary
Slaughtering and skinning of animals	16.3.5.1 of the RPA	Permitted
Storage, unloading and loading of coal	16.3.5.2 of the RPA	Permitted
Discharges from miscellaneous activities, such as building and construction, general engineering an vehicle engine maintenance	16.3.13.1 of the RPA	Permitted
Composting Activity	7.6.13.3 of the RPW	Discretionary

Overall the proposals in the application are considered as a discretionary activity. Hence section 104B of the Act provides that the consent authority may grant or refuse the application and, if granted, may impose conditions pursuant to section 108.

4. Submissions

The application was notified on 20 January 2010, and the period for submissions closed on 17 February 2010. A total of 588 submissions were received. All submissions were in support of the application. (The Summary of Submissions had 591 entries, but 3 were false with no accompanying submission.)

5. Hearing Appearances

The application was heard in Oamaru on Monday, 26 September and Tuesday, 27 September 2011. Those who appeared at the hearing were:

For the applicant:

Mr Kerry Smith, Legal Counsel for the applicant

Mr Daniel Hailes, General Manager Commercial, Alliance Group Limited (formerly Plant Manager, Pukeuri works)

Mr Roger Cudmore, Air Quality Consultant (Director, Golders Associates (NZ) Limited)

Dr Terence Brady, Air Quality Consultant (Director, Terry Brady Consulting Limited)

Dr Francesca Kelly, Consultant Public Health Physician (Director of Environmedical Aeraqua 2010 Limited)

Mr John Kyle, Consultant Planner (Director, Mitchell Partnerships)

Submitters:

Mr Thomas Latimer, Secretary Pukeuri Sub Branch, NZ Meat Workers Union

Mr Ross Ewing, Farmer and Immediate Past President North Otago Federated Farmers

Mr Gary McLeod, Resident of North Otago

Officers:

Mr Christopher Shaw, Manager Consents

Mr Matthew Bell, Senior Resource Officer

Dr Deborah Read, Public Health Specialist (consultant)

Mr Peter Christophers, Panel Assistant (Principal Resource Officer)

6. Matters Considered

In coming to our decision on this application we have considered the following:

- the Application, including the Assessment of Environmental Effects (AEE);
- all supporting documents for the AEE, including the Assessment of Air Discharges report, the Identification of Planning Considerations report, and the Record of Community Consultation;
- the further information requested by the Otago Regional Council and the response from the applicant;
- the Officers' Report;
- the Applicant's Evidence to the hearing, including answers to our questions;
- the Submissions and presentations by submitters at the hearing;
- the responses of officers at the hearing to the applicant's revised suggested conditions of consent;
- the matters observed during our Site Visit;
- the applicant's Right of Reply (both verbal and written); and
- the various Statutory Considerations outlined in section 15 of this decision report.

7. The Applicant's Evidence

Mr Kerry Smith

Mr Smith gave opening submissions for the applicant. He described the receiving environment, and provided an overview of the discharges and the boilers.

He confirmed that a 35 year term of consent was sought and he discussed the status of the activity. He referred to the provisions and case law regarding sections 5 and 104 of the Resource Management Act (the Act). In particular, Mr Smith stated that section 5 refers to managing the use, development and protection of physical processes. His submission was that the resource consent process is not about the protection of natural and physical resources, or elevating the threshold to be met to the point where it becomes a barrier to considering and applying section 5 of the Act. For example, the Act does not require that only applications assessed to be risk free will be granted.

Mr Smith submitted that the application is consistent with the overall thrust of the objectives and policies of the Regional Plan: Air (RPA). He added that the integrity of the RPA is not compromised by granting this application.

Mr Smith stated that there are 592 (sic) parties in support to this application, and he submitted that it is important that the Council Officer's section 42A report (the officers' report) is not elevated to being treated as a de facto submission. He noted that the applicant has no obligation to prove that it ought to be granted resource consent, but it does have a burden to prove the evidential claims it makes.

He then summarised Mr Cudmore's, Dr Brady's and Dr Kelly's evidence. He outlined aspects in the officers' report which he submitted were wrong or irrelevant. In particular, Mr Smith noted that with the exception of Dr Read's comments on health, it would appear that comments on the air dispersion modelling are beyond the professional expertise of the report writers, as all of the remaining report writers are planners or have expertise in waste water disposal. He added that the glaring gap is that none of the officers has the expertise to give evidence about PM_{10} and SO_2 discharges to the air or to comment on Mr Cudmore's work.

Mr Smith stated that the officers' report fell short in two respects. The criticisms of Mr Cudmore's work on PM_{10} and SO_2 are unqualified; and the report fails to support what is claimed by evidence. He submitted the net result is that no weight could be given to those parts of the officers' report which attempt to critique the air dispersion modelling and the resultant assessment of effects.

He commented further on the officers' report and noted that the officers have a reductionist approach to the assessment of effects, in that no matter what the effect is Council staff state that the discharge should be reduced.

He noted that it appears Council staff have been promoting a philosophy or a policy about a "sinking lid" for discharges to air which is not captured in the Act, the National Environmental Standards for Air Quality (AQNES) or the RPA.

Mr Smith then considered the air quality criteria of the Otago Goal Levels (OGLs) and the AQNES. He stated that considerable caution is required in applying the advice in the officers' report suggesting that the OGLs have the same or similar legal consequences as the AQNES criteria. He submitted the policies in the RPA require the Council to have regard to the OGLs, but not to apply them. That is, the RPA does not have a rule which applies the OGLs but instead states that the AQNES criteria be applied.

Mr Smith then discussed the reference in the officers' report indicating it was unacceptable to use "dilution as a solution". He submitted that any discharge can be described as an invitation to use dilution as mitigation, but that does not mean the activity fails to satisfy sections 104, 105 or 5 of the Act. Any resource consent that has the ability to have a discharge into the environment is, in a sense, drawing on the potential for dilution. The Act encourages consideration of dilution as a mitigation technique. The obvious example is section 107, considering the effects of a discharge to water after reasonable mixing.

He then considered the upgrading of other similar large scale discharges within Otago that have adopted new technology, including baghouses, to reduce the discharges of PM_{10}. He added that to understand the comparison being drawn it is necessary to assess:

- what the receiving environment was prior to the discharge;
- what the level of discharges were anticipated to be without a baghouse; and
- the level of discharges in the receiving environment once the baghouse is installed.

Mr Smith submitted that, as Mr Cudmore and Dr Brady consider the differences between the levels of PM_{10} discharged from those other industries and the applicant's as almost immaterial, a baghouse is clearly not required to mitigate potential adverse effects.

He noted that the officers' report had recommended a 35 year term, which is appreciated and accepted as appropriate. He added that given that the effects of the combustion discharge are no more than minor, there is no basis for considering anything other than a long-term consent with appropriate conditions.

He then submitted that the first consent condition recommended in the officers' report negates the term, because it requires the installation of a baghouse to be undertaken by 2016. Mr Smith stated that, in practical terms, by the time the applicant commissions any upgrading technology, installs that technology, trials it and is satisfied that the system works, far less than a 5 year window of opportunity has actually been provided.

Mr Smith then noted that the applicant accepts the adoption of a best practicable option approach (BPO) to the consent. He added that Mr Kyle recommends that a formal report addressing BPO matters be produced at 10 yearly intervals. He submitted that seems reasonable given likely changes in technology over time and the expectation the applicant will prepare a detailed report for reference to the Council addressing technological improvements, including whether or not it is reasonable for them to be incorporated into the Pukeuri plant.

In concluding his submissions, Mr Smith noted that no argument had been maintained or demonstrated in the officers' report justifying that the present and anticipated effects are unacceptable. He regarded it as illustrative that the Pukeuri plant has operated at the present site for about 97 years. Therefore, he suggested, a reasonable assumption is that if either PM_{10} or SO_2 had caused adverse effects, they would have manifested themselves by now, but nothing has emerged to cause concern. He added that the contrary is shown by 591 (sic) submitters in favour of the application, and a favourable response from Public Health South which had no reason to submit. He stated that, had the effects been unacceptable, at least one submission in opposition might have been expected. He referred to an "alarmist approach" in the officers' report, which had not been supported by the community.

Mr Daniel Hailes

Mr Hailes described the Pukeuri plant and its operation and recent plant upgrades. In particular he identified that the main operations that discharge contaminants to air and have the potential to cause adverse effects beyond the site include:

- the reception and holding of stock prior to processing;
- the primary processing of meat for export and local sale;
- the rendering of animal material otherwise not suitable for human consumption;
- skin processing including salting, fellmongering, production of pickled pelts and some wet blue processing, which involves several degreasing and washing stages, then the addition of chromium III salts before further washing;
- wool washing and drying;
- the operation of three coal fired boilers; and
- ancillary processes such as wastewater treatment and disposal, land application of biosolids and composting.

The discharge of contaminants from a landfill for industrial solid waste near the coast to the north-east of Pukeuri plant is authorised by three separate consents and is not part of the current application.

Other operations that have minimal or no potential to cause adverse air quality effects beyond the site boundary include:

- secondary processing (further processing) of dressed carcasses;
- chilling, freezing and cold storage. These operations have the potential to discharge ammonia to the atmosphere that may drift off-site although the risk is small; and
- a stock effluent disposal (SED) facility that was established by the Council, located near the main entrance to the site. The SED is located on land owned by the applicant, but is leased to the operator of the facility. All operations related to the facility are undertaken by third parties.

He described the main operation of the plant under the headings of meat processing and stockyards, rendering, skin processing, wastewater management, human waste, wastewater treatment, composting, energy plant, soot blowing and coal storage.

Mr Hailes stated that the applicant is committed to the sustainable management of the natural and physical resources that it depends on. In meeting this commitment, the applicant takes all practical steps to:

- meet or exceed relevant regulatory requirements;
- continually improve environmental performance;
- optimise the use of resources to minimise the impact of our operations;
- annually review the adequacy of environmental impact achievements and progress;
- communicate regularly on environmental matters with stakeholders – from the farm to the customer.

Mr Hailes stated that the applicant's environmental management systems, including those at Pukeuri, are certified to the internationally recognised standard, ISO 14001; and are also certified to Enviro-Mark®NZ, an environmental certification programme administered in NZ by Landcare Research.

He noted that the applicant had considered possible alternative locations and methods of discharge to air. The assessment included with the application had considered alternative coals for the boiler and further improvements to odour control.

Mr Hailes confirmed that the applicant has sought a consent term of 35 years because:

- the Act provides for a maximum term of 35 years;
- other similar activities have been granted 35 years, including recent industrial resource consents in the Oamaru area such as Holcim and Gillies;
- long term security for the substantial and ongoing investment at the site;
- a 35 year term would enable future investment in the plant to be promoted; and
- an Odour Reduction Programme is proposed to identify and implement further practicable odour reductions.

He noted that the applicant has consulted widely and received unanimous support for the granting of this permit. He concluded that Pukeuri plant has strong support for its application. It had no opposition from the community, for a consent to be granted on the terms applied for.

Mr Hailes also noted that in December 2010 Council carried out a compliance review of the Discharge to Air Permit 98390. The plant received an overall compliance status of "Grade 1: Compliant", which means that the applicant as consent holder is complying with all aspects of the consent conditions.

Mr Hailes then referred to photographs of the site and surroundings, indicating that the majority of land located between the plant and the coast is owned by the applicant.

Mr Hailes then answered questions from us. Regarding the receipt of material from other plants he answered that such material is accepted on a daily basis. He added that planned changes at the Sockburn (Christchurch) plant will have an impact on Pukeuri's operation.

He confirmed that plant shutdowns were scheduled and co-coordinated between plants to meet seasonal demand. There was only one time in the last 6½ years when an unscheduled shut down occurred. He added that this was due to a burst pipe.

In response to a question regarding the operation of the boilers, Mr Hailes stated that the plant only needs to operate two boilers during peak production periods. He also stated that the large boiler (number one) operates for a longer period of time than the two smaller boilers.

Regarding mitigation of discharges, Mr Hailes noted that in the last two years new aerators were fitted in the oxidation pond, there was increased plant recycling and lesser product was being transported off site. He added that testing of the boiler discharges would occur this year when the plant is at full production.

Mr Hailes confirmed that other fuels had been considered for the boilers, but this would have involved a significant increase in cost. He added that the use of lignite was considered, in case West Coast sourced sub-bitumous coal was no longer able to be supplied.

Regarding other plants operated by the applicant, Mr Hailes said that all rendering lines have been upgraded and all plants use coal boilers except for two of their minor plants.

In response to a question regarding plant upgrades, Mr Hailes noted that each year priority of upgrading is assessed, and at the moment no plant upgrades are proposed. He added that there is the potential for upgrading the rendering plant in the future, though the material supplied to the site from other plant may dictate what upgrades are required.

Regarding odour mitigation, Mr Hailes noted that the applicant is actively reducing the amount of material being transported from the site. He added that better use is also being made of the composting facility.

In response to a question regarding sulphur dioxide levels of the discharge, Mr Hailes commented that the use of lignite would decrease sulphur dioxide but increase PM_{10} discharges. Hence, there was a need to balance those two factors.

On plant and boilers capacity, Mr Hailes responded that, as the Lorneville plant can cater for double the Pukeuri plant, Lorneville's boilers are about twice as large as Pukeuri's though they have same particulate collection systems.

Mr Roger Cudmore

Mr Cudmore provided a description of the activities and receiving environment, and outlined the assessment methodologies used, odour effects and the coal-fired boiler effects. He also discussed the Best Practicable Option (BPO) for minimising boiler discharges, the officers' report, and conditions of consent.

He provided the emission parameters for the applicant's boilers given in Table 2 below. These include estimates for the existing coal blend and the option of using lignite.

Table 2: Contaminant emission rates and discharge parameters

Coal option	**Efflux velocity (m/s)**	**SO_2 emission rate (g/s)**	**SO_2 emission rate (kg/h)**	**PM_{10} concentration (mg/m^3, dry STP, 12 % CO_2)**	**Volumetric flow rate (m^3/s, dry STP, 12 % CO_2)**	**PM_{10} emission rate (kg/hr)**
Existing blend	8	29.6	107	280	9.6	9.7
Lignite option	10	15.4	55	280	12	12.2

Mr Cudmore reported that he used field odour surveys, odour diaries, community feedback and a review of processes at the site to assess the existing odour effects from the applicant's activities. He found that the level of odour effects upon the local Pukeuri community would be acceptable with the adoption of the BPO for minimising those emissions. He expected that achieving the BPO would likely involve process changes and engineering upgrades that will result in reduced emissions of sulphide and rendering type odours from the processing site and wastewater system. He therefore agreed with the approach of undertaking further investigations of these sources and implementing an odour reduction programme that the applicant has accepted as a condition of consent.

The assessment of effects due to the coal-fired boiler emissions to air was carried out by Mr Cudmore using a standard atmospheric dispersion modelling method. He stated that because the assumption was that the boilers are operated every hour of the year at full capacity, the results of the atmospheric dispersion modelling for 24 hour and longer averaging times are very conservative.

He noted that when Total Suspended Particulate (TSP) emissions from the boiler are higher than assumed for his assessment, that does not have a proportionate impact on PM_{10} emissions. High TSP emissions are invariably a result of larger particulate, not in the PM_{10} size range, escaping the control systems and are not a concern regarding health effects. Mr Cudmore stated that this reality, combined with the conservatism of the continuous maximum boiler operation for a year, means the PM_{10} emission assumptions for the boilers are robust and conservative.

Mr Cudmore noted that after considering the worst case boiler ground level concentrations and allowing for background ambient contaminant concentrations, all localised areas of maximum cumulative air quality impact comply with relevant health guidelines and standards. He added that the isolated case of the 10 minute discharge of SO_2 not complying with the Council's guideline in a localised area does not indicate adverse effects that are more than minor. This is because the Council's guideline is set well below the health effects threshold established by the World Health Organization, as well as the insensitive location where this non-compliance could occur.

He believed that accounting for the PM_{10} composition at the Pukeuri plant, the location, and spatial aspects of maximal PM_{10} impacts from the boiler stack are defining factors the officers' report has overlooked. In this regard he considered the assertions in the officers' report, regarding the potential for adverse health effects due to the boiler discharges, are not likely to reflect the reality of air quality in Pukeuri and the impact of the applicant's activities.

Mr Cudmore considered that minimising emissions via the BPO is a reasonable requirement to impose on air consents where long terms are being sought. Given the low level of ambient PM_{10} increase that is predicted for the coal-fired boilers, he stated there is not a

strong effects-based argument for requiring additional controls. The maximum predicted contribution to 24-hour PM_{10} concentrations in the Pukeuri residential areas of around 5 µg/m³ is low, and this is associated with background PM_{10} that would be dominated by coarse PM_{10} (> 2.5 µm) natural sources including sea salt spray and aged particulate.

Mr Cudmore stated that an investment in instrumentation to allow for better boiler control and more efficient energy use represents part of the BPO for ensuring boiler emissions are minimised. The other key part of the BPO involves the maintenance of the boiler and particulate control equipment to ensure they work effectively and achieve emission levels that are routinely within the TSP emission limits proposed for this application (TSP ≤400 mg/Nm^3 at 12 vol. % CO_2, dry basis). Operating the boilers consistently within this TSP limit would require normal TSP stack concentrations to be routinely within a band of 250 to 350 mg/Nm^3 when operating the boiler at capacity.

He reviewed the officers' report and noted that in paragraph 5.12 it is alleged that the boiler TSP levels show an increasing trend. However, he considered that data does not show a trend, but instead demonstrates high variability over time, which he considers to be mostly as a result of the change in testing methods. Mr Cudmore added that large variations in TSP are not likely to reflect the same variation in the PM_{10}. In fact with regard to $PM_{2.5}$, which is likely to be the main driver of the potential for health effects, he doubted there is a strong link to the measured TSP emission levels.

Mr Cudmore also concluded it is very unlikely that adverse health effects are currently being caused due to emissions of SO_2 from the applicant's boilers. He contended that the officers' report conclusion in paragraph 5.126 seems to rest upon a minor level of non-compliance using a widely unaccepted WHO guideline for 24-hour SO_2.

Regarding the officers' report comments on soot blowing, Mr Cudmore noted that soot blowing is necessary for all coal-fired boilers irrespective of the level of emission controls, or any up-grade one might envisage for a water tube steam boiler. With the use of a bag-house filter, soot blowing will still need to occur, but the particulate emissions will be reduced to low levels. Without the bag-house there is a greater potential to cause nuisance effects due to soot and dust deposition. But he understood that nuisance effects from the boiler operation and soot blowing activities have not been a significant issue.

Mr Cudmore then commented on consent conditions 1, 2, 9, 11, 12, 14 and 16 in the officers' report.

Regarding condition 1, he noted that this has the ramification of requiring the applicant to install a significant emission control system for removing fine particulate. Mr Cudmore believed that the installation of a bag-house filter or electrostatic precipitator goes beyond what represents Best Practicable Option (BPO) for the site.

Regarding condition 2, Mr Cudmore noted that this condition requires the sulphur content of fuel burned to be less than 0.5 %, whilst the current maximum sulphur content of the coal is 1.4 wt% on an "as-received" basis. He added that there is no effects-based argument for requiring this lower sulphur content.

Regarding condition 9, he noted this condition details the requirement for the applicant to prepare a Management Plan for air discharges. Mr Cudmore specifically referred to the reference in the first sentence of the condition to the BPO and, although he considered a BPO condition was appropriate, he recommended it be specified as a stand-alone condition and not part of the condition regarding the Management Plan.

Regarding conditions 11 and 12, Mr Cudmore noted these conditions require emissions testing from the boiler stack on three occasions throughout each year - March, July and November. He commented that this is far more onerous than the historic practice of requiring annual (or two yearly) testing of boiler discharge stacks, and would require a test during the off-season for meat processing.

Mr Cudmore added that he agreed that a more efficient monitoring regime could be implemented. To achieve that, he recommended the use of continuous on-line particulate measurement instrumentation combined with annual manual stack testing. This would provide operators with better opportunity to manage the boiler operation to minimise emissions.

He noted that SO_2 emissions can be estimated from coal use and the sulphur content monitoring of coal that is routinely undertaken. He added that the SO_2 ground level concentrations are not sufficiently high to justify either continuous monitoring or an intensive three monthly emission testing programme. In his opinion annual testing of SO_2 emissions in parallel with PM_{10} emissions testing would be sufficient for this consent.

In conclusion, Mr Cudmore noted that the combustion contaminant discharges from the coal-fired boilers at the Pukeuri plant are likely to cause minor potential for adverse health effects on the surrounding community. Furthermore, the increase in ambient contaminant levels surrounding the Pukeuri plant, due to the coal-fired boiler discharges, would not cause any non-compliance with existing AQNES or AAQG values.

He noted that the peak level of ambient PM_{10} within the Pukeuri area that is likely to be caused by the coal-fired boiler discharge would be minor, whereas typical levels of PM_{10} caused by the boilers above the existing background levels would be of an extent that would be difficult to detect by ambient monitoring. Consequently, he believed the capital and operational expenses of installing a bag-house filter system to treat all the combustion exhaust flow are not justified, given that the current discharges are unlikely to have a measureable adverse effect on the community.

Mr Cudmore stated that in the future, the BPO for controlling site PM_{10} emissions may change, and it may include other technology such as an electrostatic precipitator that are more able to remove ultra fine particulates from the boiler discharge to air.

As there are likely to be a moderate level of adverse effects on parts of the Pukeuri community due to odour emissions from components of the rendering, compost, and wastewater operations at the site, Mr Cudmore considered that the applicant should further investigate these sources and ensure that the BPO is used to minimise site odour emissions. He noted that with regard to the compost operation and the wastewater plant, though the extent of odour effects is smaller, these sources can be significant if operated with poor control. Therefore, the BPO for minimising odour emissions from these processes would need to ensure that good management systems and procedures are in place and that the performance is monitored.

Mr Cudmore then answered our questions. In response to a question regarding a TSP concentration of 400 mg/Nm^3 being used for modelling when average measurements from the applicant's boilers have been as high as 680 mg/m^3, he noted that the boiler is expected to operate at 400 mg/Nm^3 if it is 'tuned appropriately'.

He confirmed that he believed that actual testing of PM_{10} had been undertaken, but he used a 0.7 factor of the TSP being PM_{10} to calculate the discharge levels. He stated that the provision of in-stack monitoring information will provide a big improvement in the confidence of the modelling.

In response to a question, Mr Cudmore noted that soot blowing will probably cause high in-stack monitoring recordings, but he was confident that lens cleaning systems would bring the instrument back into effective operating condition.

Regarding the effect of discharges of PM_{10} from vehicles on the main highway, Mr Cudmore noted that although they raise the ambient levels of PM_{10}, they have a less significant effect than sea spray.

Responding to a question regarding the new AQNES, Mr Cudmore noted that its use would not change anything in his evidence.

In response to question regarding the locations of predicted maximum concentrations, Mr Cudmore noted that the modelling results are reflective of what he expected. With respect to the meteorological conditions, he explained that the models start with large scale factors and then iterate down to small scale data.

In response to a question regarding odour, he noted that a down wind assessment rather than modelling information is required. He added that there was no reliable modelling information, and that he didn't know if there had been any site odour measurements undertaken in the last two years.

On the Odour Reduction Programme (ORP), Mr Cudmore noted that as it is necessary to identify where an odour is coming from, the ORP is very important. He added that the rendering plant odours have been found not to be so important, and modelling of odour from the boilers stack is unreliable.

In response to a question regarding whether the TSP recordings in excess of 680 mg/m^3 was due to the testing or poor boiler control, Mr Cudmore noted that it was due to poor boiler control. He added that the boiler discharge should be able to be operated to achieve a limit of 400 mg/Nm^3.

Regarding future emission testing, Mr Cudmore agreed that an increased frequency of testing for PM_{10} would be desirable.

Dr Terry Brady

Dr Brady was engaged by the applicant to peer review the Golder technical report. He considered the boiler efficiency and combustion calculations and came to the conclusion that the Golder data was reasonable.

He noted that the officers' report stated in paragraph 5.12 that the particulate emission tests "show an increasing trend". However, he doubted that this is actually the case, and it is more likely that the results are simply representative of combined poor boiler operation and grit arrestor efficiency at the time of the tests. Although there may be an effect of gradual deterioration in grit arrestor performance over time that contributed to the apparent increase, he believed that the fundamental cause is poor boiler operation, and that it is just coincidence that more recent tests have shown higher results.

Dr Brady undertook modelling of the discharge using independent meteorological data. He found a closeness in the two sets of model predictions, derived using quite different methods, and so he concluded that the Golder model predictions are sound.

He noted that the maximum off-site concentrations of PM_{10} contributed by the applicant's boilers discharges are predicted to be no more than 7 to 9 µg/m^3, 24-hour average, and about 1 µg/m^3, annual average. He observed that those values are, respectively, about a half and a quarter levels indicated in the Holcim consents application.

Dr Brady also compared the applicant's PM_{10} levels with those from the Fonterra Stirling plant. The maximum predicted off-site PM_{10} level that occurs as a result of Fonterra Stirling discharges, after the installation of a baghouse filtration system, is 6 µg/m^3, 24-hour average, and the maximum at the nearest residence is 4 µg/m^3.

He noted that the worst case meteorological conditions that result in the highest predictions of PM_{10} are at locations close to the plant and occur when there are consistent winds in the vicinity of 2 to 8 m/s. Under these conditions he expected the background levels will be low; no more than 10 µg/m^3, 24-hour average. Adding those two values, Dr

Brady predicted worst case PM_{10} concentrations of no more than 17 to 19 µg/m^3, 24-hour average, which is well below the AQNES value of 50 µg/m^3. He considered this to be no more than a minor effect, and found it difficult to understand how this can be construed as being a significant adverse effect as suggested in the officers' report.

He stated that proposed conditions 11 and 12 that require emission testing three times per annum are excessive. He noted that the most important aspects to good operation and minimisation of discharges are good maintenance and good boiler operation. He added that the changes that he has initiated at the plant go a long way to achieving this, and these initiatives combined with the proposed upgrade to automation of the boilers will ensure that they maintain acceptable levels of particulate emissions.

Dr Brady also supported Mr Cudmore's suggestion that an alternative to the tri-annual testing is to install a continuous particulate monitor, and added that it should be used as a boiler management tool rather than a compliance monitor. Dr Brady stated that this type of monitoring is hugely more informative and useful to the operators and the regulator, as far as maintaining acceptable emissions, than three one hour tests three times per year. Consequently, he suggested that conditions 11 and 12 be reworded to allow for this type of monitoring instead of a tri-annual emission test.

In conclusion, Dr Brady stated that his assessment confirmed that of Golders, which showed that the effects of current PM_{10} are no more than minor. So no additional controls are required, other than greater attention to maintenance and boiler operation than has been the case in the past.

Dr Brady then answered our questions. On the proportion of the TSP that is PM_{10}, he responded that he understood that emission testing in 2009 showed that 64% of TSP was PM_{10}.

In response to a question regarding apparent air leakage post the combustion chamber of boiler 1, he noted that previously the multicyclone grit collectors served both boilers 1 and 2 (the latter disestablished) , but he was not sure if they were internally separated. He added that boilers 3 and 4 have separate multicyclones collectors. We then asked whether anything can be done in the short term to improve the discharge from boiler 1, and Dr Brady replied that he is "currently working through that problem".

In response to a question regarding the effectiveness of the baghouse to catch smoke, Dr Brady noted that some black smoke can be caught by a baghouse, but white smoke will pass through it. He added that it was necessary to have at least a 80% reduction in the volume of smoke to achieve a visual reduction.

Dr Brady confirmed that what the applicant was proposing was the BPO, especially given the location of the plant.

Dr Francesca Kelly

Dr Kelly addressed the likelihood of adverse effects on health from exposure to contaminants to air from the continued operation of the applicant's three coal-fired boilers, which operate in varying combinations during the year, according to seasonal variation in numbers of animals processed.

She stated that her evidence relies on the Air Quality Assessment Report by Golder Associates and a peer review of that assessment by Terry Brady Consulting Limited. She noted that her assessment of health risks has followed the approaches recommended by the New Zealand Ministry of Health, through the Public Health Commission, and the World Health Organization.

Dr Kelly considered toxicological and epidemiological information, ambient air quality guidelines and the NESAQ, and the context of the receiving environment. She reviewed the potential for sulphur dioxide and respirable particulates to produce health effects, both individually and in combination. She estimated exposures to predicted concentrations at five receptor sites, and made a comparison of those predicted concentrations with the results at a monitoring station in Oamaru.

Dr Kelly concluded that the likely degree of risk from particulate discharges from the applicant's boilers to be a minor addition to background levels, and that the actual effects are likely to be difficult to discern in practice. She found that the concentrations of sulphur dioxide are associated with a low likelihood of a risk from health effects.

She noted that the information available to her about the predicted ambient concentrations of discharges of the products of coal combustion, as described by Mr Cudmore, leads her to conclude that there are unlikely to be adverse acute or chronic effects on health. She added that all contaminants for which guideline values are available are expected to have ambient concentrations less than those guidelines.

Dr Kelly then answered our questions. Regarding selection of the indicator sites for her health assessment, She said that the sites were chosen in conjunction with Mr Cudmore and were near affected dwellings or where there was a cluster of dwellings located in different directions. The locations were not paddocks or the five worst affected houses.

In response to a question regarding the importance of $PM_{2.5}$, Dr Kelly noted that this was important regarding the applicant's discharge as it is the $PM_{2.5}$ within the PM_{10} that causes health issues. She also noted that though combustion of coal releases $PM_{2.5}$, background levels are mainly non combustion PM_{10}.

In response to a question regarding the health effects of the Pukeuri plant workers, Dr Kelly responded that there was no health effects of the employees identified that related to air pollution.

Mr John Kyle

Mr Kyle provided an overview of the application, a summary of the concerns raised in the officers' report, an assessment of the proposed discharges in a statutory context, and an assessment of the validity and appropriateness of the recommended conditions.

In particular, he noted that it appears that Council staff have not taken advice about the application from an expert in air dispersion modelling, nor has it in any other way undertaken an independent assessment of the current quality of the discharges at the applicant's plant or what are anticipated in the future.

Mr Kyle added that the officers' report appears to work on a different philosophical level, which is that improvements are required over time to improve the living environment in Otago. He described this as a "reductionist approach to emissions". Given the evidence of Mr Cudmore, Dr Brady and Dr Kelly, he believed that this reductionist view is misplaced. He added that it is not consistent with the requirements of the Act, the provisions of the RPA, or the available evidence.

He stated that, based on technical evidence provided by Dr Kelly and Mr Cudmore, he found the application to be consistent with the various relevant objectives and policies of the RPA.

Regarding the BPO, Mr Kyle noted that Mr Cudmore and Dr Kelly have assessed the sensitivity of the receiving environment and the nature of the discharge proposed and both conclude that the emissions controls on the current boilers represent BPO for the applicant's plant.

He added that Mr Cudmore concludes there is no requirement to provide any additional mitigation for the coal fired boiler discharges given ambient conditions and the sensitivity of the existing environment, and Dr Kelly's evidence confirming that there will no more than minor effects on public health supports those conclusions. He concluded there is no technical, environmental or statutory basis to support the officers' position.

Mr Kyle stated that the costs of implementing the officers' recommended upgrade and subsequent maintenance of that system would far outweigh any mitigating benefit of doing so, particularly in terms of potential human health issues.

He then provided comment on the officers' report recommended consent conditions, in particular the condition requiring the applicant to undertake upgrades to ensure that the discharge of PM_{10} from the boilers meets a concentration of 50 mg/m^3 or less by 1 September 2016. He noted that, without the upgrade, the proposed discharge of 12.2 kg/hour will comply with the National Environmental Standard for PM_{10}. A mandatory upgrade condition is unwarranted, particularly in light of the recommended BPO condition to prevent or to minimise odour discharge and boiler discharges from the site.

Mr Kyle considered that an annual review period is too frequent to allow for a meaningful and comprehensive analysis of advancements in technology, changes in the surrounding environment, and technology costs that will influence BPO considerations. Mr Kyle believed that this review period should be altered such that it applies every 10 years.

He stated that Council staff recommended condition 2 of the officers' report requires that by 1 September 2016 the consent holder shall be required to burn a coal with sulphur content coal of no greater than 0.5%. He added that as it is not necessary to burn lignite in order to achieve an acceptable SO_2 emissions standard, this condition is unnecessary.

Mr Kyle identified that the monitoring recommended in conditions 11 and 12 of the officers' report require samples to be taken three times per year. However, once the emission rate has been established, there is no need for as frequent monitoring, as is recommended by Council staff. He added that Mr Cudmore has reviewed these conditions and suggests that a more feasible monitoring frequency would be annually. In his view this would provide sufficient certainty that the emission rate is being achieved.

Mr Kyle then answered our questions. On the application of provisions of the RPA to this application, he noted that policy 9.1.1 in the Plan requires the reduction of PM_{10} discharges within Air Zones 1 and 2. He pointed out that as the applicant's plant was not located within either airshed this policy is not relevant.

In a question to Mr Kyle we noted that proposed conditions 6, 7 and 8 relate to what is done now to control odour, but an Odour Reduction Programme has also been proposed as condition 13. He agreed that the applicant may need to seek a variation to the consent condition at a later date.

We also asked Mr Kyle to respond to his use of 18 moths for preparation of the Odour Reduction Programme, whereas the officers' report indicated the Programme be prepared by 1 March 2012. He responded that the 18 months was recommended by the applicant's air quality consultants.

Mr Daniel Hailes (brief return)

Mr Hailes provided us with further information regarding odour and boiler related improvements measures undertaken at the Pukeuri plant in 2010 and 2011, as well as a key performance indicator report for the use of electricity, boiler fuel, water and carbon dioxide emissions between the period 3 October 2009 and 27 August 2011. He also produced reports of emission testing at the coal fired boilers carried out on 1 May 2009.

In response to a question regarding the continuous monitoring of each of the boilers, Mr Hailes confirmed that the applicant will monitor the operation of each boiler. He added that this requirement will be included in the Management Plan.

8. Submitters Appearances

Mr Thomas Latimer

Mr Latimer supported the application and noted that his submission was as a private citizen and as an Official and Secretary of the Pukeuri Sub Branch of the Meat Workers Union.

He stated that the Union's members do not want the Pukeuri plant to be put at risk of closure, because of a decision that makes the ongoing upkeep of the plant more expensive than need be compared to other plants, as this would destroy the local economy and the families it supports. He does not believe that the applicant should be required to meet overseas emission requirements, simply because it is the Council's wish to promote the lower emission rates of some other countries.

In response to a question regarding the closure of the plant, Mr Latimer responded that all that is being sought is an even playing field between all meat works.

When asked if the Union would support future technology to improve the environment, he noted that the environment is important to the Union as this is where the sheep are sourced. However, the Union was more concerned with workers incomes then the effects on adjacent paddocks. He added that, from an environmental health point of view, he was satisfied with the information provided by the applicant that the Pukeuri plant is a safe place to work.

Mr Ross Ewing

Mr Ewing supported the application and introduced himself as a farmer and immediate past president of North Otago Federated Farmers. He noted that there needs to be environmental balance and questioned: "Where do the emissions from our freezing works fit into the magnitude of emissions in our whole catchment?"

He noted that there appears to be no known health issues with the current discharge, and he added that resource consents need to effects based not technology based.

In response to a question from us, Mr Ewing stated that he would support running the boilers more efficiently, with reduced operational costs and better environmental effects.

Mr Ewing also commented that every cost added is an increased burden to the industry.

Mr Gary McLeod

Mr McLeod supported the application and noted that many people in the community had approached him regarding discharges from the Pukeuri plant.

Mr McLeod stated that most people he has spoken to believe that health issues from the boiler discharges are not of a great concern and that as people expect, the plant produces some odour, but the smell is not as bad as it was in the past.

He added that many families rely upon the plant for their livelihood, as well as many organisations, including schools. He said that he had spoken to a local doctor who confirmed that there appears to be no greater frequency of respiratory disease in the local population or workers at the site than would be expected in any 'normal' population.

In response to a question regarding opposition to the discharge, Mr McLeod confirmed that no one opposed the discharge.

9. Response by Council Officers[1]

Mr Chris Shaw

Mr Shaw confirmed Mr Smith's submission that Council staff involved with the preparation of the officers' report are not air quality experts, but instead are generalists. He noted that the staff had attended air quality workshops and conferences, as well as receiving in-house training.

Mr Shaw stated that though he agreed with Mr Cudmore's modelling, one of the boilers is 75 years old and Council staff have concerns that a lot of assumptions have been made by Mr Cudmore in the modelling. He added that he would be surprised if a boiler made in 1936 can be fine tuned for today's environment. He stated that if resource consent was to be granted then there should be continuous monitoring of the discharge, especially as Dr Brady had indicated that the boilers had not been working properly.

He noted that if this was a greenfields site, then the application would be refused by the Council. He added that it appears that the applicant is doing nothing to improve the existing discharge. Mr Shaw also noted that the Council has recently worked with other similar dischargers regarding upgrading. He believed that the staff recommended consent conditions are a BPO approach

He noted that a PM_{10} discharge concentration of 10 – 29 mg/m^3 should be achievable, but Council staff were only requiring 50 mg/m^3. Mr Shaw added that meeting these levels does not mean that the standards and guidelines will not change in the future. The RPA does not allow these levels to be polluted up to.

Mr Shaw noted that health information presented for the applicant still has significant question marks, and that knowledge of health effects is always changing.

[1] We note that the Otago Regional Council did not make a submission on the application. The primary purpose of this part of the hearing was to obtain the officers' response to revised conditions of consent proposed by the applicant (via Mr Kyle). We did not, and would not, elevate the status of the officers' report to that of a de facto submission.

Mr Shaw stated that Council's approach is consistent with safeguarding the environment. He added that the environment is not for polluting into, for example the Council does not allow communities to pollute into the Clutha River-Mata-Au. In his opinion there was no real difference between discharging into air or into water, as over time there could be a cumulative effect and the environment could be progressively degraded.

He also noted that the environment changes, and that a local example of this was the Shag River drying up, compared to its situation 20 years ago.

Regarding all discharges being treated equally, Mr Shaw noted that whilst Holcim and Gillies were granted a 35 year term to discharge, their PM_{10} limit was as low as 10 mg/m^3.

Mr Shaw then stated that the Council recommendation was now amended to a term of 10 years, rather than 35 years. He concluded by agreeing with Mr Kyle that the Council's stance is reductionist, as air quality should be enhanced whenever opportunities are available.

Mr Mathew Bell

Mr Bell stated that he was not disputing the modelling, but noted that though a TSP value of 400 mg/m^3 was the discharge concentration used for the modelling, a TSP value of 680 mg/m^3 was measured in January 2009. He added that this was equivalent to a PM_{10} concentration of 410 mg/m^3.

He stated that this high level of TSP also raised concerns regarding the boilers not operating as well as they should. He noted that this information was only provided every 2 years.

Dr Deborah Read

Dr Read noted that PM_{10} is a no threshold air contaminant, and should be reduced as much as practicable. She added that the contribution of $PM_{2.5}$ within the PM_{10} discharge was likely to be more hazardous for public health. She indicated her main concern was long-term exposures to $PM_{2.5}$.

She noted that in general children and the elderly are more susceptible to health effects of particulate matter. She observed that no information had been presented on the current state of health of the Pukekuri residents. She added that although the low population may suggest a small overall health risk, the level of PM_{10} produced as a result of discharges from the boilers stack may cause individual health problems.

Mr Mathew Bell (on conditions)

We asked Mr Bell to respond to the applicant's revised proposed conditions of consent (as tabled by Mr Kyle).

Mr Bell noted that the applicant had removed the term from the introduction to the consent and placed it as condition 1. He stated it was Council's preference for the term to stand outside the consent conditions.

Regarding Mr Smith's reference to the mid points of the consent, he noted that it is Council's standard practice to have a mid point, as well as identified distances to road intersections. He added that he was willing to accept the use of the applicant's more accurate legal descriptions.

Mr Bell said that he still supported the staff recommended consent conditions. He then made the following comments on the revised consent conditions proposed by the applicant:

- He accepted that the PM_{10} emission rate in condition 2 does not need to be corrected to $0^{o}C$.
- Condition 3 should remain as recommended in the officers' report as the Otago Goal Levels for sulphur dioxide were predicted to be breached.
- Conditions 4, 5, 6, 7, 8 and 9 are the same as conditions recommended in the officers' report, and therefore are accepted.
- Condition 10 on the control of combustion air supply is accepted.
- Condition 11 on an in stack continuous monitoring system is accepted.
- Condition 12 is not preferred, and the officers' report recommended condition 9, with more detail of what is required in the Management Plan, should be used instead.
- Condition 13 requires an Odour Reduction Programme within 18 months from the date of the commencement of the consent, but he indicated that 12 months is more appropriate.
- Condition 14 includes comments regarding BPO; however, the officers' report recommended condition 1 is a better place for indicating the BPO.
- Conditions 15 and 16 regarding, respectively PM_{10} and sulphur dioxide emission testing, should require it to be carried out 3 times per year rather than annually.
- Condition 17 is the same as condition 13 recommended in the officers' report, and therefore is accepted.
- Condition 18 allows 6 months from the commencement of the consent for purchase and installation of equipment to monitor wind speed, wind direction and temperature, which is accepted.
- Condition 19 on the record of odour complaints is accepted.

- Condition 20 on the carrying out of an Odour Diary Programme if the number of complaints during a period of six months exceeds 5 is similar to condition 16 recommended in the officers' report, and therefore is accepted.

- Conditions 21 and 22 on, respectively, community consultation and informing the Consent Authority of changes are accepted.

- Condition 23 should retain the requirement for the assessment to be made in the opinion of an enforcement officer of the Consent Authority.

- Conditions 24 and 25 on, respectively, the keeping of records and dealing with non-consented discharges are accepted.

- Mr Bell noted that due to the varied results of the emission testing of the boiler discharges, the officers' recommended version of the review condition 22 should be retained.

In response to a question regarding why Council staff didn't recommend a mass emission rate, rather than a concentration emission, as has been specified previously on the consent for the applicant's activities, and on other discharge permits, Mr Bell responded that concentration limits have been recommended most recently, as this more accurately reflects what filtration technology can attain.

10. Site Visit

Around mid afternoon on Tuesday, 27 September we visited the site with Mr Christophers, Panel Assistant. Alliance personnel who accompanied us were Mr Geoff Proctor, Plant Manager, Mr Ivan Docherty, Operations Manager, and Mr Bevan McCully, Engineering Manager. None of those Alliance personnel had previously participated in the hearing. Mr Gary Byrne, Personnel and Safety Officer, provided us with a safety briefing.

Areas of the plant we visited were:

- the boiler house (three coal-fired boilers);
- the rendering plant (including the I-well cookers; the blood drier and the small DAF wastewater treatment unit);
- the stock yards;
- the skin processing area;
- the reception bin for off-site material for rendering;
- the main DAF wastewater unit;
- the "south east" wastewater sump area;
- the composting facility; and
- the wastewater treatment plant.

Because of the time of day during our visit only boilers and I-well cookers were operating. Unfortunately none of the three identified most significant sources of odour - a wastewater stream from skin processing, the main DAF wastewater treatment unit, and a reception bin for off-site material for rendering – were operating.

The actual boilers that were in operation were numbers 3 and 4. We were especially interested to look at the particulate collection equipment at the boilers, the exhaust ducting for the I-well cookers vent gases and the blood drier exhaust to the discharge stack, and the sampling point at the stack. There is evidence of recent repair and modification work around the multicyclone collection equipment at the number 1 boiler.

The sampling port is appropriately located, being about 8 stack diameters downstream of the point of entry of the ducting to the stack and about 12 stack diameters upstream of the stack exit. The stack has a diameter of about 1.6 metres at the sampling point, and so two ports at 90 degrees would be preferable. No ladder access is provided to the sampling point, and we were told crane access is provided for the emission testing when required.

At the wastewater treatment plant, we were informed that to improve the performance of the ponds two aerators had recently been installed.

As a result of our drive to the site, and our travel to and from the wastewater treatment plant, we saw the locations of many of the about 40 neighbourhood properties that are considered in the application to be "receptor sites". In particular we saw the property of the resident who was previously concerned about odours from a drain that ran near her residence. That drain has now been realigned away from the property.

The site visit was informative, and did not require us to seek clarification on any matter from the applicant. That was conveyed to Mr Smith, Legal Counsel for the applicant, by email on 30 September.

11. Applicant's Right of Reply[2]

Mr Smith began by stating that his formal written right of reply would be forwarded to us as soon as it had been prepared. But in the interim he provided the following comments:

He noted that for any application proportionality and evidence must be taken into account. He cautioned that we should be aware that what is actually occurring may not be what Council staff would lead us to believe. In particular, regarding the video evidence presented by Mr Shaw, Mr Smith noted that the plumes could have come from anywhere. Dr Brady had indicated to him that they were unlikely to have come from the applicant's stack.

[2] Mr Smith, Legal Counsel for the applicant, made verbal closing submissions at the hearing on 27 September 2011 and forwarded written submissions on 14 October 2011.

Mr Smith noted that he had never seen a discharge permit application that does not include modelling of effects and we should not be fearful of an effect that may occur. He noted that two health experts have said that no health effects will be caused by the discharges and that we must use the balance of probabilities, rather than beyond reasonable doubt, when assessing the application. He added that the Act is not a no risk statute.

He then stated that the Council Officer's evidence is "not worth the paper it is written on". He noted that it is not good enough to have the work of Dr Brady and Mr Cudmore questioned by Council staff with rudimentary training. He added that given the Council Officer's level of expertise, it was lamentably poor to put people through this hearing. He concluded that we should put aside the Council Officer's information.

Mr Smith noted that all witnesses said that a perpetual continual review is appropriate and a 10 year review has been prepared by the applicant that will ask critical questions. He added that the reporting starts now otherwise the 10 year information will be useless.

He stated the applicant has proposed a review condition that is very potent. He added that if new technology is developed than the review condition could be invoked to reflect this. That is, the review conditions could 'gut' the consent conditions, as it is a case of 'perform or be reviewed'. He referred to this as constant review.

On the AQNES he stated that the recent amendments should be used. Mr Smith noted that the RPA lists damaged airsheds, and Regulation 17 relates only to damaged airsheds. The evidence provided is that the airshed in which the applicant's plant is located is not damaged.

In summary, Mr Smith noted that the application is robust, has been peer reviewed and has passed the local 'sniff' test. He added that 588 submissions had been received in support, with no one saying that the discharges needed to change. He also stated there was no basis to include the wording "in the opinion of an enforcement officer" when investigating complaints, and he questioned whether this requirement was fair and reasonable to a consent holder.

Mr Smith concluded that the application should be granted with the applicant's proposed consent conditions.

The hearing was then adjourned awaiting the written right of reply.

The written right of reply of Mr Smith was received on 14 October 2011. In summary he noted that the applicant's expert evidence was, in total, that the discharges of particulate matter and sulphur dioxide are so low that they were described as no more than minor.

Regarding the Council Officer's revised recommendation of a 10 year term, Mr Smith noted that this proposal was not accompanied by any evidence to justify that recommendation or to explain why the consent conditions and the power to review them were insufficient.

Mr Smith noted that the officers' recommended restrictive conditions lack proportionality as they fail to place into context that the Pukeuri plant has been operating for about 97 years, and it is in an unpolluted airshed. He also noted that the Council staff acknowledged that they do not have any professional qualifications in air quality matters, even though they criticised the work of the witnesses. He added that Pukeuri School, which was identified by Council staff, actually closed 20 years ago.

Mr Smith stated that the Pukeuri plant discharge without a baghouse filtration system is not significantly different from those the Council Officer's sought to draw unfavourable comparisons with. He said that the expert evidence is that the effects on the environment of its existing discharge without bag house filtration are negligible. He added that the addition of a baghouse would not alter these discharges significantly. Furthermore, the cost benefit of requiring that technology for this plant is not justified on any assessment under the Act.

Mr Smith stated that the BPO approach requires, as a matter of law, constant reviews of available technology and a response to changes in technology. Consequently, it would not be sufficient for the applicant to take no steps between now and the 10th anniversary of its resource consent and then, at that stage, present a report for further assessment.

The applicant's acceptance of a BPO condition coupled with a review condition gives the Council substantial powers to ensure that the proposed discharges remain acceptable. Mr Smith added that the applicant must constantly review available technology and at each review faces the prospect that its consent conditions might be reviewed and altered to something else. He noted that the prospects are high that over 35 years the existing technology will change.

Mr Smith stated that the arguments of the Council staff asserting that the three coal fired boilers are obsolete is wrong, and devoid of any evidential support. The boilers have been modified, maintained and upgraded over many years, and Dr Brady believed they were fit for purpose. He noted that the checks and balances written into the consent conditions are more than enough to ensure that the expectations of Mr Cudmore and Dr Brady are reviewed over time and reconsidered.

Regarding Regulation 17 of the AQNES, Mr Smith noted that this Regulation does not apply as the Pukeuri air shed is not a polluted one and has not been gazetted as being polluted by the Council. He added that as this is a replacement consent resource consent application for an existing activity, the discharge is also not captured by this Regulation.

Mr Smith stated that the primary issue is whether or not the applicant can satisfy the test of sustainable management in section 5 of the Act. He added that the applicant can satisfy this test because it demonstrates an ability to use natural and physical resources in a way which avoids, remedies or mitigates any potential adverse effects on the environment. He noted

that Mr Kyle had reached the same conclusion; that the applicant's activities satisfy section 5(2) of the Act in that they represent sustainable management.

Following consideration of the written right of reply[3], and with no further questions, the hearing was closed on 18 October 2011. A letter advising that was sent to parties on 19 October.

12. Matters for which there was Substantial Agreement[4]

A matter that formed a large part of the application documentation and much of the evidence for the applicant at the hearing was the atmospheric dispersion modelling of discharges. Mr Cudmore confirmed he was the primary author of the Golder Associates report *Assessment of Air Discharges*, October 2009, and he presented evidence on the modelling at the hearing. Dr Brady's evidence was a peer review of Mr Cudmore's work.

Our questioning of Mr Cudmore on aspects of the modelling was limited to a few points of detail. For example, we noted that for the development of the meteorological data set four sources of wind data were available – Oamaru, Oamaru airport, Windsor, and Pukeuri – but the Oamaru airport and Pukeuri data were not used because of a high percentage of reported calm conditions (caused by the instrument having a high cut-off velocity). We therefore questioned Mr Cudmore's inclusion of the Oamaru airport wind rose in his evidence (at Figure 2, page 8).

We noted there were significant differences in the wind roses, so we welcomed the proposed installation at Pukeuri of a properly configured meteorological station for continuous measurement of wind speed, wind direction and temperature.

Because Dr Brady developed an alternative (simpler) meteorological data set, we sought to determine whether his approach was valid. Through a comparison of the frequency of atmospheric stability categories (that is, the so-called STAR data sets) Dr Brady was able to show little difference between the two meteorological data sets.

We noted that although Dr Brady obtained via his combustion calculations a higher gas volumetric flow rate, he then used the same assumptions as Mr Cudmore regarding the total suspended particulate discharge concentration (400 mg/m^3) and the proportion of the TSP that is PM_{10} (70%). (We discuss our views on those assumptions in section 14 of this decision report.) For his calculation of 24-hour PM_{10} concentrations Dr Brady reverted to

[3] In an email dated 14 October 2011 Mr Smith was requested to serve his written closing submissions to the submitters who appeared at the hearing.

[4] This section is included because the matters discussed formed a large part of the content of the hearing, and we have chosen to report our observations on those matters. 'Substantial agreement' in this context means the officers' report was largely in agreement with information in the application documentation, and this level of agreement continued at the hearing.

the same discharge rate as Mr Cudmore. That provided a direct comparison of model performance, which was the correct approach for a peer review.

We are generally satisfied with the high quality of the atmospheric dispersion modelling carried out. We have no reason not to accept Dr Brady's conclusion that Mr Cudmore's model predictions are sound.

The officers' report recommended that a consent condition require the preparation of a Management Plan, and for the Management Plan to be reviewed annually. This is a common feature of discharges to air permits, as it provides a flexible mechanism for day-to-day control of activities.

Although the applicant accepted at the hearing the requirement of a Management Plan, there remained differences with the officers' report regarding the degree of specification of matters to be included in the Plan. We refer to that matter in section 13 below, and address it through changes to the consent conditions.

The Golder Associates report *Assessment of Air Discharges* which accompanied the application reported on an assessment of sources of odour using a combination of community feedback (i.e., odour diaries and consultation) and site investigations. Some 47 "receptors" located within 1.5 km of the site, in 10 neighbourhood groups, were identified. Conclusions were reached on the frequency, nature and intensity of odours experienced by the neighbours, and the likely sources of the odours.

Although the assessment approach in the Golder report seemed both logical and comprehensive, we decided it was necessary to seek information on how its findings compared with previous investigations. There was a requirement in the existing consent to produce a report, within two years of that consent being issued, to investigate controlling fugitive odour from the rendering plant. Apparently a report was prepared for the applicant in 2004 by Sinclair Knight Mertz.

The response from Mr Cudmore was that the Golder assessment determined that an odour control programme should be targeted at specific items of plant, rather than for example providing full ventilation of the rendering building to odour control equipment. The Golder assessment identified as the three main sources of odour: a wastewater stream from skin processing, the main DAF wastewater treatment unit, and a reception bin for off-site material for rendering.

The application endorsed the Golder assessment but suggested that further investigations were required. The need for an assessment of engineering options was specifically mentioned, and a condition referring to an Odour Reduction Programme was proposed. As the application was made two years prior to the hearing we enquired about odour reduction measures that had occurred in the intervening period. Mr Hailes provided us with a list, which indicates various process engineering and procedural changes to reduce odours.

Process engineering changes included the recycling of pelt processing liquor (with recycle of pickle liquor to follow), increased aeration at the wastewater treatment plant, and redirection of the wastewater drain away from a neighbour. Procedural changes included better acid stabilisation of rendering material from other sites and only turning the windrows at the composting operation when the wind is not blowing towards neighbours.

The officers' report expressed general satisfaction with the approach to be followed to address remaining sources of odour, and the recommended conditions include the requirement for an Odour Reduction Programme. There was a difference regarding the time period required to produce the Odour Reduction Programme. We refer to that matter in section 13 below, and address it through a change to the consent conditions.

Dr Brady's evidence (at paragraph 13, pages 3 & 4) alerted us to recent high oxygen levels measurements in stack discharges, caused by either inefficient operation of the boilers or air in-leakage at duct work. Inefficient operation of the boilers results in more coal being burned, which increases discharges of contaminants to air. Air in-leakage prior to the multicyclone collectors reduces their collection efficiency, increasing discharges of particulate matter.

These problems should have been evident from the results of the particulate emission testing. High oxygen levels in the discharge stack result in low carbon dioxide concentrations, and that is what was reported for the emission testing carried out on 1 May 2009. (We were given reports of that testing at the hearing, and we comment on those results in section 13 below.)

It was proposed by the applicant that there be better control of air supply to each of the boilers to optimise boiler energy efficiency. This would be done by installing measurement equipment to sense the oxygen content of the exhaust gases from the boiler and to use that to modulate the combustion air supply, so as to achieve a set point target for the exhaust oxygen concentration.

The officers indicated support for such an installation. We agreed, especially since the two older boilers – number 1 (75 years old) and number 3 (58 years old) – do not have any oxygen sensing and trim equipment. Although such equipment is installed in the newest boiler – number 4 (25 years old) – it may be necessary for that to be upgraded.

To be effective, the oxygen sensing should be done as close as possible to the boiler combustion chamber. Otherwise air in-leakage may interfere with the readings and cause insufficient combustion air to be supplied, producing smoke emissions. There remains the potential for air in-leakage beyond the point of oxygen sensing which, if before the multicyclone collectors, would reduce their collection efficiency. Any air in-leakage would dilute the readings of the in-stack particulate concentration monitoring (discussed below) and hence should be avoided.

We considered whether continuous in-stack oxygen sensing and recording was required. The main issues are to recognise leaks in duct work and to carry out maintenance work to repair them. These are matters best addressed in the Management Plan. Also, greater attention is needed to analyse the results of the emission testing. If measured carbon monoxide levels are significantly less than 12% then air in-leakage is occurring.

The applicant also proposed there be in-stack particulate concentration monitoring, using either light extinction or light scattering technologies. We asked about the availability of self-cleaning devices, to allow for the impact of soot blowing, and we were told that such systems are available. We decided that logging of the measurements was required. The officers indicated support for the in-stack particulate monitoring.

13. Principal Issues in Contention[5]

The principal issue in contention prior to and during the hearing was whether a major reduction in discharges of particulate matter from the boilers stack was required. This became linked to the term of the consent. The application proposed that a 35 year term be granted, and a modest (from 20 kg/h to 12.2 kg/h) reduction in the particulate matter discharge limit[6] from that in the existing consent be applied. The officers' report endorsed the 35 year term, but recommended there be a further major (ca. 90%) reduction in the particulate matter discharge limit[7] to apply from 1 September 2016.

At the hearing both the applicant and the officers restated those competing views. It therefore became our role to consider the evidence and determine on the matter. In the following section of this decision report we record consideration of that issue, both at the hearing and in our deliberations, and our findings. Relevant to those considerations were the evidence on the health effects of particulate matter.

We felt it was necessary to explore the current situation regarding quantities of discharges of particulate matter, by seeking information on the results of stack emission testing for particulate matter. We were provided by Mr Smith, legal counsel for the applicant, with emission test reports for PM_{10} and total suspended particulate carried out in May 2009.

Another issue at the hearing was the environmental effects of discharges of sulphur dioxide from the boilers stack. The atmospheric dispersion modelling predicts maximum ground level concentrations exceeding the Otago Goal Levels (OGLs) for sulphur dioxide. Those maxima were found to occur in locations very close in to the applicant's site.

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[5] 'Contention' in this context means that evidence for the applicant at the hearing was contrary to the recommendations in the officers' report.

[6] The existing consent limit is for total suspended particulate, whereas the limit proposed by the applicant is for PM_{10}. As is explained in the next section of this decision report, these should be considered equivalent.

[7] Emission test data suggests that 12.2 kg/h is equivalent to about 500 mg/m^3, 0^{o}C, 1atm, 12 % CO_2, dry gas basis, and the staff report recommends an emission limit from 1 September 2016 of 50 mg/m^3, 0^{o}C, 1atm, 12 % CO_2, dry gas basis.

We asked questions about these predicted exceedances of the OGLs. In the next section of this decision report we record our findings on that issue. Relevant considerations were the air quality criteria used and the balancing of the countervailing factors associated with the possible use of lignite fuel (i.e., a lower sulphur fuel, but also a lower calorific value fuel).

The following additional matters were in contention at the hearing:

- the matters to be included in the Management Plan;
- the time period to produce an Odour Reduction Programme; and
- the frequency of stack emission testing.

Our findings on those additional matters are reflected in the wording of relevant conditions. These are described in section 18 of this decision report.

14. Findings on the Principal Issues in Contention

An important line of questioning was related to us trying to understand the current situation regarding quantities of discharges of particulate matter, and their relationship to what was proposed and recommended for PM_{10} discharge limits. As should be evident in some of the write-up in section 7 of this decision report, we found significant gaps and conflicting information regarding this matter in the application documents and the evidence for the applicant. In particular, we were concerned that the PM_{10} discharge quantity modelled may not be consistent with measured total suspended particulate (TSP) values.

The Golder Associates report *Assessment of Air Discharges* which accompanied the application based the discharge quantities on an emission factor for TSP of 400 mg/m^3. It was then assumed that 70% of the TSP is PM_{10}. The exhaust gas volumes were calculated from combustion principles. It seemed to us that those theoretical calculations should have at least been supplemented with the results of TSP emission testing. That testing has been required by the existing consent to be carried out two yearly.

The officers' report (in Table 2, page 10) provided the results of TSP emission testing in 2002, 2005, 2007 and 2009. Those data were not commented on by the applicant at the hearing. The 2009 data shows an average TSP mass emission rate of 13 kg/h, and a range of between 10 to 16 kg/h. Hence we were concerned that the proposed PM_{10} emission limit of 12.2 kg/h may not be achievable, especially if Mr Cudmore's assumption of 70% of the TSP being PM_{10} was inaccurate.

In response to questioning of the applicant's air quality experts regarding the most recent information on discharge quantities of particulate matter we were provided with test reports of emission testing carried out on 1 May 2009. Although that data would have been available prior to lodgement of the application, it was not reported on in the documentation. We summarise the emission data in Table 3 below.

Table 3: Results of Particulate Matter Emission Testing, 1 May 2009

Time of Day	PM_{10} or TSP	Concentration*, uncorrected for CO_2	Concentration*, corrected to 12% CO_2	Mass emission rate, kg/h	PM_{10}/TSP
09:03-09:43	PM_{10}	310	510	12	84%
10:17-10:53	TSP	230	430	9.0	
11:34-12:14	PM_{10}	270	400	10	93%
12:40-13:16	TSP	190	360	6.8	
13:46-14:26	PM_{10}	219	420	7.6	92%
14:48-15:24	TSP	200	400	7.3	

* milligrams per cubic metre, $0^{o}C$, 1 atmosphere and a dry gas basis

The emission testing data provides useful information, but they also raise questions about some of the assumptions used in the evidence for the applicant. In particular, Mr Cudmore's view that 70% of the TSP is PM_{10} is not supported by the results of the testing. We determine that it would be more appropriate to assume that all of the TSP is PM_{10}.

The third and fourth columns of Table 3 show that the carbon dioxide contents of the discharges during the emission testing were much different than the expected 12%. They were actually about 6%, which indicates either the boilers were operating at high excess air levels or there was considerable air in-leakage in the duct work to the stack, or both. This supports the proposed installation of combustion control instrumentation at the boilers.

The emission test data does not support Mr Cudmore's contention that for combustion of the existing coal blend 280 mg/m^3 of PM_{10} at 12% CO_2 is equivalent to 9.7 kg/h. (The proposed PM_{10} discharge limit of 12.2 kg/h is his value for the lignite fuel option.) However, the emission testing data summarised in Table 3, and that for 2002, 2005 and 2007 recorded in the staff report, are all less than the proposed 12.2 kg/h discharge limit. That is pleasing, because 12.2 kg/h was the PM_{10} discharge value that was used in the atmospheric dispersion modelling. Hence there is no need for us to scale the results of the modelling.

On the question of whether there should be an additional (and major) reduction in the PM_{10} discharge limit to apply from 1 September 2016, as recommended in the officers' report, we considered the points made in Dr Read's memorandum on *Particulate Matter and Health*, that is attached to the staff report, and the evidence of Dr Kelly at the hearing. We found both sets of information to be useful. We note however that Dr Read's memorandum was of a more general nature, whereas Dr Kelly's evidence provided us with more specific information for the Pukeuri location.

We are generally supportive of Dr Read's contention that emissions of particulate matter should be reduced as much as practicable. However we are also mindful that the relevant air quality criteria are the standards of the National Environmental Standards for Air Quality (NESAQ), the Ministry for the Environment's Ambient Air Quality Guidelines (AAQG), and the Otago Goal Levels (OGLs) of the Regional Ambient Air Quality Guidelines.

Mr Cudmore's evidence provided predicted ground level concentrations of PM_{10} at various locations, i.e., the absolute maxima at any location, near residential properties, and at 'typical locations' in Pukeuri township. To summarise those, including the adding in of assumed background concentrations, the predicted 24-hour average concentrations were 20-24 $\mu g/m^3$ and the annual average concentrations were 12-13 $\mu g/m^3$. The equivalent air quality criteria are 50 $\mu g/m^3$ (NESAQ and AAQG) and 35 $\mu g/m^3$ (OGLs) for 24-hour average concentrations and 20 $\mu g/m^3$ (AAQG) for annual average concentrations.

With no predicted exceedances of air quality criteria for PM_{10}, one of our primary considerations on whether a major reduction in the PM_{10} discharge limit to apply from 1 September 2016, as recommended in the officers' report, is required relies on whether policies in the Regional Plan: Air (RPA) are applicable. (We outline policies in the RPA for reducing discharges of PM_{10} in the next section of this decision report.) Because the applicant's site is located in Air Zone 3 and the discharges are not likely to have an effect in the Oamaru Airshed (a "specified airshed" in Air Zone 2), we find that the relevant policy in the RPA is not applicable.

The other main issue we asked questions about at the hearing was the environmental effects of discharges of sulphur dioxide from the boilers stack. Mr Cudmore's evidence provided predicted ground level concentrations of sulphur dioxide at various locations, i.e., the absolute maxima at any location, near residential properties, and at 'typical locations' in Pukeuri township. They indicated maximum 1-hour and 24-hour sulphur dioxide concentrations in non-residential areas (paddocks) very close to the applicant's site in excess of the Otago Goal Levels (OGLs). The NESAQ and AAQG criteria were not exceeded, nor were the OGLs at other locations.

We considered the significance of that. Again the provisions of the RPA were our primary consideration, in particular the OGLs.

The OGLs are set to protect human health, and for sulphur dioxide they are two-thirds of relevant NESAQ and AAQG criteria also set for protection of human health. Regulation 14 of the NESAQ states that *the ambient air quality standard .. applies .. where people are likely to be exposed to the contaminant*. There is Ministry for the Environment guidance[8] for ecosystem effects, including for sulphur dioxide a level of 30 $\mu g/m^3$, annual average, to protect agricultural crops. The highest predicted annual average concentration for sulphur dioxide was 11 $\mu g/m^3$.

[8] *Ambient Air Quality Guidelines 2002 Update*, Ministry for the Environment, May 2002, Table 4, page 44.

To address the exceedances of the 1-hour and 24-hour OGLs for sulphur dioxide, Mr Cudmore's evidence provided the results of atmospheric dispersion modelling for replacement of the sub-bituminous coal with a lower sulphur lignite option. They showed the OGLs not being exceeded.

There is however a negative air quality issue associated with the lignite option – that of increased particulate matter discharges, as a result of the lower calorific value of the fuel (requiring more of it to be burned to produce the same amount of energy). Furthermore, we noted Mr Hailes' evidence that there are no plans to use lignite in the foreseeable future.

15. Statutory Considerations and Findings on Statutory Considerations

Much of the decision-making for this application rests on whether various statutory provisions are relevant and applicable. In this section we record our considerations and findings on statutory matters.

As required by section 104(1) of the Resource Management Act 1991 (the Act) we had regard to *any actual and potential effects on the environment of allowing the activity*. We also had regard to other statutory provisions, including Part 2 (sections 5 to 8) and sections 104, 105 and 108 of the Act.

The provisions of section 104 are all *subject to Part 2*, which means that the purpose and principles of the Act are of paramount importance. The officers' report[9] accurately recorded the requirements of Part 2. We evaluated the application against the requirements of section 5 (Purpose) and section 7 (Other Matters).

Applying section 5 to a resource consent application involves an overall judgement of whether the proposal would promote the sustainable management of natural and physical resources. That judgement requires a comparison of conflicting considerations and the scale and degree of them and their relative significance. Section 7 sets out various other matters we are required to *have particular regard to* in relation *to managing the use, development, and protection of natural and physical resources*. They are principles to be applied in achieving the purpose of the Act.

We determined there were no matters of national importance, as given in section 6, that may be affected by the application. We also determined the application was not contrary to the principles of the Treaty of Waitangi, a consideration required by section 8.

In accordance with sections 104(1)(b) of the Act, we had regard to the following statutory documents:

[9] As provided for in section 113(3)(a)(ii) of the Act, instead of repeating material we have chosen to cross-refer to information in the officers' report, prepared under section 42A.

- The Regional Policy Statement
- The Regional Plan: Air for Otago
- The Regional Plan: Waste for Otago
- The Kai Tahu ki Otago Natural Resource Management Plan
- The Resource Management (National Environmental Standards for Air Quality) Regulations 2004[10]

We also considered the following other matters to be relevant and reasonably necessary to determine the application in accordance with section 104(1)(c), being:

- The Ministry for the Environment's Ambient Air Quality Guidelines, 2002 Update

The officers' report recorded requirements of the Regional Policy Statement, the Regional Plan: Air, the Regional Plan: Waste and the Kai Tahu ki Otago Natural Resource Management Plan that was relevant to the application. We evaluated the application against the Objectives and Policies in those documents. In particular, we noted that Kai Tahu was consulted by the applicant and formally notified of the application, and did not make a submission.

Not mentioned in the officers' report were the Policies in the Regional Plan: Air (RPA) for reducing discharges of PM_{10}. Policy 9.1.1 states: *to reduce discharges of PM_{10} to comply with the ambient air quality standard for PM_{10} by 1 September 2013, in Air Zone 1 by following curved line paths to compliance, and in specified airsheds in Air Zone 2 by following straight line paths to compliance*.

The applicant's site is located in Air Zone 3, and the Oamaru Airshed of Air Zone 2 is about 3.5 km away. Table 3, page 33 of the RPA includes the Oamaru Airshed, and so it is one of the *specified airsheds in Air Zone 2* referred to in Policy 9.1.1. However, the PM_{10} discharges from the coal-fired boilers are not predicted to have an effect in the Oamaru Airshed, and so a reduction in those discharges is unlikely to be part of measures to achieve compliance with the PM_{10} air quality standard in the Oamaru Airshed. Hence we determined that Policy 9.1.1 of the RPA is not applicable.

Potentially relevant provisions of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (the AQNES) are Regulations 17 and 21.

Regulation 17(1) requires that *a consent authority must decline an application for a resource consent (the **proposed consent**) to discharge PM_{10} if the discharge to be expressly allowed by the consent would be likely, at any time, to increase the concentration of PM_{10} (calculated*

[10] The Regulations were amended on 1 June 2011 by the *Resource Management (National Environmental Standards for Air Quality) Amendment Regulations 2011*. Mr Smith, Legal Counsel for the applicant, confirmed that the 2011 amendments were applicable to this hearing.

as a 24-hour mean under Schedule 1) by more than 2.5 micrograms per cubic metre in any part of a polluted airshed other than the site on which the consent would be exercised.

A polluted airshed is one that *on and from 1 September 2012 or any later day if, for the immediately prior 5-year period, .. the airshed's average exceedances of PM_{10} .. was more than 1 per year.*

PM_{10} emissions from the coal-fired boilers discharge into the adjoining Air Zone 3 and possibly also in the more distant (ca. 3.5 km away) Oamaru Airshed of Air Zone 2[11]. Air Zone 3 is not likely to be deemed a polluted airshed. PM_{10} concentrations in the Oamaru Airshed exceed the AQNES standard[12], and so it is likely to be deemed a polluted airshed. However, the discharges from the coal-fired boilers are not predicted to increase the 24-hour mean PM_{10} concentrations in the Oamaru Airshed by more than 2.5 micrograms per cubic metre.

There is a more fundamental consideration. Regulation 17(2) provides that *subclause (1) does not apply if-*

*(a) the proposed consent is for the same activity on the same site as another resource consent (the **existing consent**) held by the applicant when the application was made; and*

(b) the amount and rate of PM_{10} discharge to be expressly allowed by the proposed consent are the same as or less than under the existing consent; and

(c) discharges would occur under the proposed consent only when discharges no longer occur under the existing consent.

All three of those matters apply (are valid) to this application. Hence we determined that Regulation 17 of the AQNES is not applicable.

Regulation 21 of the AQNES requires that a *consent authority must decline an application for a resource consent to discharge sulphur dioxide into air if the discharge to be expressly allowed by the resource consent is likely, at any time, to cause the concentration of sulphur dioxide in the airshed to breach its ambient air quality standard*. We determined that an exceedance of the sulphur dioxide air quality standard is not likely, and so Regulation 21 is not applicable.

Not mentioned in the officers' report is section 104(2A) of the Act. That requires that *when considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder*. Section 124 refers to the exercise of a resource while applying for a new consent. We determined that section 124 is

[11] Maps Showing Air Zone Boundaries, *Regional Plan: Air for Otago*, Schedule 2, page 105.
[12] Start points for the straight line path to achievement of the ambient air quality standard for PM_{10} in Air Zone 2, *Regional Plan: Air for Otago*, Table 3, page 33.

relevant, and so we have regard to the value of investment in our consideration of the application.

The officers' report referred to section 104(E) of the Act, regarding applications relating to discharge of greenhouse gases. We agreed that renewable energy is not used to reduce discharges into air of greenhouse gases, and so we have had no regard to the effects of such a discharge on climate change.

Section 105(1) of the Act is a relevant matter. Because *the application is for a discharge permit to do something that would otherwise contravene Section 15.. we .. must .. 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.

Section 108(2)(e) of the Act is also relevant. It specifies that a resource consent may include *a condition requiring the holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment of the discharge* .. That provision is subject to section 108(8), which requires us to *be satisfied that, in the particular circumstances and having regard to-*

(a the nature of the discharge and the sensitivity of the receiving environment; and

(b) other alternatives, including any condition requiring the observance of minimum standards of quality of the receiving environment-

the inclusion of that condition is the most efficient and effective means of preventing or minimising any actual or likely adverse effect on the environment.

To summarise, the sections of the Act that we considered were relevant to our decision were sections 104(1), 5, 7, 104(2A), 105(1), 108(2)(e), and 108(8). In particular, we considered whether a condition requiring 10 yearly reviews of the Best Practicable Option was the most efficient and effective means of minimising any actual or likely adverse effect.

Provisions in statutory documents we had regard to in our consideration of a decision were the air quality standards of the National Environmental Standards for Air Quality (AQNES), Policies in the Regional Plan: Air (RPA), and the Otago Goal Levels of the Regional Ambient Air Quality Guidelines. Especially relevant was the non-applicability of both Regulation 17 of the AQNES and Policy 9.1.1 of the RPA regarding reducing discharges of PM_{10}.

16. Decision

Having regard to the evidence presented at the hearing and the other matters listed in section 6 of this decision report, we determine pursuant to the jurisdiction of section 34A of the Resource Management Act that consent for application 2009.424 be **GRANTED** subject to conditions, for a term of 10 years from the date of commencement.

17. Reasons for the Decision

The reasons for our decision to grant the consent include:

- The application is not inconsistent with sections 5, 7 and 105(1) of the Resource Management Act.
- The ground level concentrations of PM_{10} and sulphur dioxide as a result of discharges from the boilers stack are not predicted to exceed the air quality standards of the National Environmental Standards for Air Quality, the Ministry for the Environment's Ambient Air Quality Guidelines, and (because they are health-based criteria) the Otago Goal Levels of the Regional Ambient Air Quality Guidelines.
- The application is not inconsistent with the objectives and policies of the Regional Policy Statement and the Regional Plan: Air (because the applicant's site is located in Air Zone 3, and the discharges are not likely to have an effect in the Oamaru Airshed).
- The conditions of consent provide for enhanced air quality management of the activities, including the introduction of a Management Plan (with annual reviews of the Plan).
- The requirements for improved combustion control instrumentation at the boilers and in-stack particulate concentration monitoring will allow for better management of operation of the boilers, and hence lesser discharges to air.
- The discharge limit in the consent represents a reduction in the permitted particulate matter discharge compared with the limit in the existing consent.
- The Odour Reduction Programme will provide for proper assessment and engineering design of measures to reduce the most significant sources of odour discharges.
- The required increased frequency of emission testing for particulate matter and sulphur dioxide will more adequately quantify the actual discharges of those contaminants to air, a matter referred to as a policy in the Kai Tahu ki Otago Natural Resource Management Plan.

The reasons for setting a 10 year term for the consent include:

- A 35 year term with 10 yearly reviews of the best practicable option would not provide a sufficient level of scrutiny of the air quality effects of the activities.
- An effective public process is required, rather than reviews as part of consent conditions, at which time changes in societal values as well as technological advances and future investment opportunities at the plant can be fully assessed.

- An application for consent within 10 years is considered necessary, and it is seen as the most efficient and effective means to assess the effects of discharges to air.
- The shorter term will encourage achievement of more efficient operation of the boilers and better quantification of discharges, so a more robust assessment of effects can be carried out.
- The condition of consent providing for annual reviews relates only to possible changes to the conditions, and not the term.

18. Conditions

As is common at hearings to consider applications for discharge permits, the conditions of consent went through various iterations. The application contained proposed conditions. The officers' report recommended adoption of some of those and significant changes to others. Some additional conditions were also recommended. The applicant, via Mr Kyle, Consultant Planner, tabled a revised set of proposed conditions at the hearing. They contained a combination of examples of some of the originally proposed conditions and acceptance of some recommended in the officers' report.

It was the set of proposed conditions tabled by Mr Kyle that we used as the starting point in our deliberations on conditions of consent. That was also the version of conditions that Mr Bell, as the lead author of the officers' report, commented on at the hearing.

In addition to minor spelling corrections and word changes, including providing consistency in terminology, we have made the following changes to the conditions:

- Removal of the term of the consent as a condition, and placing it in the introductory section of the discharge permit, in accordance with the standard Council format.
- Inclusion of the requirement that if the particulate emissions are reported as total suspended particulate then the PM_{10} concentration shall be deemed to be the total suspended particulate concentration (i.e., not having that as an Advice Note).
- Specification that monitoring of the exhaust oxygen concentrations shall be at individual boilers (and not at the discharge stack).
- A fuller list of matters to be included in the Management Plan.
- Inclusion of the collection of data from the in-stack particulate concentration monitoring system.
- A reduction in the time period for producing the Odour Reduction Programme, from eighteen months to one year from the commencement of the consent.
- Deletion of the condition requiring a review of available technology by the tenth anniversary of the consent (this being covered by the need for a new application).
- Specification that emission testing be undertaken as far as practicable when the total operating capacity of the boilers is at a minimum of 75%.

- Inclusion in the complaints record of the date and time of the incident.
- Use of standard Council terminology for the condition regarding no noxious, dangerous, offensive or objectionable air quality effect beyond the boundary of the site.
- Inclusion of the receipt of any monitoring information relating to the exercise of the consent as a possible reason for carrying out a review of the conditions.

The Discharge Permit is attached to this decision report.

Consent No. 2009.424

DISCHARGE PERMIT

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

Name: Alliance Group Limited

Address: Level 2, 51 Don Street, Invercargill

To discharge contaminants to air for the purpose of operating a meat processing and export plant.

For a term expiring 10 years from the commencement of this consent

Midpoint locations of consent activity: *Plant:*

Pukeuri, approximately 650 metres north west of the intersection of Works Road and Mcculloch Road

Composting and Wastewater Treatment:

Pukeuri, approximately 600 metres north of the intersection of Works Road and Mcculloch Road

Biosolids Application:

Pukeuri, approximately 900 metres north of the intersection of Works Road and Biggs Road

Legal descriptions of consent location:

(1) Pt of Sec 109 Blk II Papakaio SD described in Certificate of Title 233/109 (Otago Registry);

(2) Pt of Sec 109 Blk II Papakaio SD described in Certificate of Title 233/110 (Otago Registry);

(3) Pt of Sec 109 Blk II Papakaio SD described in Certificate of Title 233/108 (Otago Registry);

(4) Pt of Sec 141 Blk II Papakaio SD and Section 3 Survey Office Plan 24957 described in Certificate of Title 357/56 (Otago Registry)

(5) Sec 87, 108 Block II and Part Sec 109-110 Block II and Sec111 Block II and Part Section 141 Block II , Sec 1 Survey Office Plan 24957 and Lot 1 DP 8064 Blk II Papakaio SD described in Certificate of Title 169/138 (Otago Registry);

(6) Lot 1 DP 17084 Blk II Papakaio SD described in Certificate of Title 8A/1022 (Otago Registry);

(7) Pts of Secs 84, 85 & 86 Blk II Papakaio SD described in Certificate of Title 233/99 (Otago Registry);

(8) Secs 88, 89 and 90 Blk II Papakaio SD described in Certificate of Title 233/105 (Otago Registry);

(9) Sec 103 Blk II Papakaio SD described in Certificate of Title 233/106 (Otago Registry);

(10) Secs 104 & 105 Blk II Papakaio SD described in Certificate of Title 233/107 (Otago Registry);

(11) Lot 7 DP 3308 and being Sec 91 & 102 Blk II Papakaio SD described in Certificate of Title 4C/663 (Otago Registry);

(12) Lot 6 DP 3308 Blk II Papakaio SD described in Certificate of Title 2D/775 (Otago Registry);

(13) Sec 98 Blk II Papakaio SD described in Certificate of Title 358/89 (Otago Registry):

(14) Lot 1 & 3 Deposited Plan 27354 described in Certificate of Title 9961 (Otago Registry);

(15) Secs 95, 96 & Pts of Secs 37 & 38 Blk II Papakaio SD (now listed as Lot A, B, C, D deposited plan 1096) described in Certificate of Title 233/78 (Otago Registry);

(16) Sec 201 Blk II Papakaio SD described in Certificate of Title 87/268 (Otago Registry);

(17) Sec 202, 203, 204 Blk II Papakaio SD described in Certificate of Title 2D/368 (Otago Registry); and

(18) Closed road intersecting Sec 38 and Pt of Sec 37 Blk II Papakaio SD described in Certificate of Title 97/203 (Otago Registry).

(Collectively the Pukeuri Meat Processing and Export plant)

Midpoint map references: *Plant:*
NZTM 2000 E1444919 N5011428

Composting and Wastewater Treatment:
NZTM 2000 E1445612 N5011480

Biosolids Application:
NZTM 2000 E1446558 N5011491

Conditions

Specific

1. The discharge of particulate matter smaller than 10 microns in diameter (PM_{10}) from the boilers stack shall not exceed 12.2 kilograms per hour when measured in accordance with Condition 13 of this consent. If particulate emissions are reported as total suspended particulate then the PM_{10} concentration shall be deemed to be the total suspended particulate concentration.

2. The sulphur content in the fuel burnt shall not exceed 1.5% by weight.

3. No waste, including paper waste, shall be disposed of in the boilers.

4. The discharge from the coal boilers stack shall occur at a height of at least 40 metres above ground level.

5. Only fresh or stabilised material shall be processed in the rendering plant. For the purposes of this condition "fresh" means:

   (a) For material derived from the slaughter and dressing of stock, no older than 24 hours from the time of slaughter.

   (b) For chilled or frozen material derived from the cutting boning or further processing operation, no older than 24 hours from the time of delivery to the rendering department.

   (c) Blood being processed shall be less than 48 hours old (from the time of kill), unless it has been stabilised with 0.3% sodium metabisulphite or another suitable stabilising agent.

   For the purposes of this condition "stabilised" means:

   Material should be stabilised by a recognised method, which may include acid stabilisation to a pH of 4.5 or the use of other proprietary stabilisation agents applied at the manufacturers recommended dose. Stabilisation should occur as soon as is practicable but no later than 8 hours from the time of slaughter of the animal or 8 hours from the removal of the animal carcase from a chilled facility.

6. Odours from the I-Well vent gases and blood drier shall be discharged to atmosphere via the boilers' stack at all times during processing.

7. Meat processing plant waste material that is intended for composting shall be drained of water, blended with bulking agent and arranged into aerated windrows within 24 hours of being recovered from source. The degree of blending shall be sufficient to maintain the windrows in a friable condition, with no more than 65% moisture and the Carbon: Nitrogen ratio shall be no more than 25:1.

8. Waste wool material recovered from the wastewater screens in the fellmongery shall be composted separately from the other windrows and shall be covered with sufficient material, such as sawdust, to absorb odour.

9. The consent holder shall control combustion air supply rates to the coal-fired boilers so as to optimise boiler energy efficiency. This is to be achieved by monitoring the exhaust stream oxygen concentration of the individual boilers and using this data to automatically modulate combustion air supply rate so to achieve a set point target for exhaust oxygen (vol. % dry). The system shall be operational within 8 months of the commencement of this consent.

10. The consent holder shall install a modern in-stack particulate concentration monitoring system to monitor particulate concentrations within the boiler discharge stack, using either industry standard light extinction or light scattering based technologies, including provision for the logging of the data. The system shall be installed within 8 months of the commencement of this consent.

Performance Monitoring

11. A Management Plan shall be finalised and provided to the Consent Authority within one year of the commencement of the consent. The Management Plan shall be reviewed annually and the consent holder shall ensure that the Consent Authority has the most recent copy of the Plan at all times. The matters to be included in the Management Plan shall include but not be limited to the following:

    (a) a description of the discharges to air authorised by this consent;

    (b) the methods undertaken to prevent odours being generated from site activities;

    (c) ensuring adequate extraction is provided at each major source of odour in the plant;

    (d) a contingency plan for the breakdown of any discharge mitigation equipment;

    (e) an operation and maintenance plan for the boilers, to ensure that they are operated as efficiently as possible at all times, and that at least annual maintenance of the boilers is undertaken by a proficient and suitably qualified person;

    (f) cleaning procedures and checks for any particulate controls are to be detailed;

    (g) a system for the collection of data from the in-stack particulate concentration monitoring, including the downloading of data each month or upon request;

    (h) a record of dates and times and duration when the particulate collection equipment are bypassed and the reasons for the bypass. This shall be kept for the duration of the consent;

(i) a record of the quantity of coal burnt each week, including the source and grade of coal burnt. This shall be kept for the duration of the consent;

(j) a system for recording all maintenance undertaken on the odour control systems and boiler plant;

(k) a description of the monitoring required;

(l) a list of site management structure and responsibilities;

(m) emergency after hours contact names and numbers;

(n) assignment of responsibility for implementing and updating the plan;

(o) copies of complaint and maintenance log templates as an appendix;

(p) a map or plan of the site detailing relevant areas of the site; and

(q) any updates to the Plan due to any future upgrades, investigations or programmes.

12. Within one year of the commencement of this consent the consent holder shall submit to the Consent Authority an Odour Reduction Programme (ORP). The ORP shall document the investigation of odours identified on pages 65 and 66 of the Golder Associates Report (Report Number 087813806) dated October 2009 and propose any further odour reduction measures that are identified that will contribute to compliance with Condition 21 of this consent. The ORP shall include a timetable for implementation of any identified measures and shall be incorporated into the Management Plan required by Condition 11 of this consent.

13. The consent holder shall undertake PM_{10} emission testing of discharges into air from the coal boilers' stack to determine compliance with Condition 1 of this consent. This emission testing:

(a) shall be undertaken within 6 months of the commencement of this consent and annually thereafter;

(b) the tests shall constitute at least three individual tests and be undertaken as far as practicable when the total operating capacity of the boilers is at a minimum of 75%; and

(c) utilising the following emission test methods:

(i) AS 4323.1-1995: Stationary source emissions - Selection of sampling positions;

(ii) AS 4323.2-1995: Stationary source emissions - Determination of total particulate matter - Isokinetic manual sampling - Gravimetric method or US EPA Method 201A - Determination of PM10 Emissions (Constant Sampling Rate Procedure);

(iii) US EPA Method 3A - determination of oxygen and carbon dioxide concentrations in emissions from stationary sources (instrumental analyzer procedure).

or other methods subject to the prior approval of the Consent Authority.

14. The consent holder shall undertake sulphur dioxide emission testing of discharges into air from the boilers' stack. This emission testing:

(a) shall be undertaken within 6 months of the commencement of this consent and annually thereafter;

(b) the tests shall constitute at least three individual tests and be undertaken as far as practical when the total operating capacity of the coal boilers is at a minimum of 75%; and

(c) utilising the following emission test methods:

(i) US EPA Method 6 - Determination Of Sulphur Dioxide Emissions From Stationary Sources; or

(ii) US EPA Method 6A - Determination Of Sulphur Dioxide, Moisture, And Carbon Dioxide From Fossil Fuel Combustion Sources; or

(iii) US EPA Method 6B - Determination Of Sulphur Dioxide And Carbon Dioxide Daily Average Emissions From Fossil Fuel Combustion Sources.

or other methods subject to the prior approval of the Consent Authority

15. Source emissions testing required by Conditions 13 and 14 shall comply with the following minimum requirements:

(a) comprise not less than three separate samples for each type of emission test undertaken;

(b) be designed and undertaken by an appropriately qualified and independent person (i.e. holding accreditation from IANZ or an equivalent body for the particular testing method being used, unless no person or body in New Zealand holds accreditation for that particular test);

(c) the installation (where required) of sampling points to comply with standard sampling requirements;

(d) notification of the Consent Authority of emissions testing at least ten working days prior to commencement;

(e) test results in milligrams per cubic metre shall be corrected to zero degrees Celsius, 101.3 kilopascals, 12 percent carbon dioxide and on a dry gas basis, and also expressed as kilograms per hour; and

(f) the provision of the results of all tests, relevant operating parameters, raw data, all calculations, assumptions and an interpretation of the results to the Consent Authority within 20 working days of the test report being received by the consent holder.

16. Within six months of the commencement of this consent, the consent holder shall begin continuous monitoring of wind speed, wind direction and temperature. The meteorological monitoring shall take place at a location on or as close as practicable to the consent holder's plant, 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 or 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, December 2000 and shall continue for a minimum period of two years.

17. The consent holder shall keep a record of all complaints it receives regarding air discharges from the site. That record shall be made available to the Consent Authority upon request. The record shall include:

    (a) the location and time where the odour or particulate matter was detected by the complainant;

    (b) the date and time when the odour or particulate matter was detected and the complaint received by the consent holder;

    (c) a description of the wind speed and wind direction when the complainant detected the odour or particulate matter;

    (d) the most likely cause of the odour or particulate matter detected; and

    (e) any corrective action undertaken by the consent holder.

18. If the number of odour complaints during a period of six months exceed 5, the consent holder shall consult with the Consent Authority, and if it is determined necessary, undertake an Odour Diary Programme in accordance with the Ministry for the Environment "Good Practice Guide for Assessing and Managing Odour in New Zealand", 2003. The results of the programme shall be provided to the Consent Authority not later than two months after completion of the work.

19. Prior to the anniversary of the commencement of this consent the consent holder shall invite all those who reside or work within 1.5 kilometres of the site to a community consultation meeting. The purpose of this meeting is so that the consent holder will:

    (a) provide an update on site operations at the meeting;

(b) record issues raised by attendees at the meeting with regard to discharges to air; and

(c) provide the Consent Authority with a written summary of the meeting within 20 working days of it being held.

20. The Consent Authority shall be informed of any changes to facilities or processes at the site that will increase air contaminant concentrations or odour discharges. The Consent Authority shall be informed at least one month prior to any changes taking place. Details to be provided shall include but not be limited to, the type, nature and specification of any change and the specification of any equipment and controls established to ensure the change does not affect compliance with the conditions of this consent nor cause any additional adverse effects.

General

21. Beyond the boundary of the site there shall be no odour, dust, particulate, smoke, ash or fume caused by discharges from the site which, in the opinion of an authorised enforcement officer of the Consent Authority, is noxious, dangerous, offensive or objectionable.

22. All records, monitoring and test results that are required under any condition of this consent shall be kept on site for a minimum period of two years from the date of each entry and shall be made available on request, during normal operating hours, to an authorised enforcement officer or agent of the Consent Authority.

23. Where from any cause (accidental or otherwise), a non-consented discharge associated with the consent holder's activities occurs, the consent holder shall:

(a) proceed with all diligence to take such action or execute such work as may be necessary to stop any further discharge; and

(b) take all reasonable steps to remedy or mitigate any adverse effects resulting from the discharge; and

(c) notify the Consent Authority within 24 hours of the discovery of the discharge and when it has been mitigated.

24. 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, or within three months of receiving any monitoring information relating to the exercise of the consent, for the purposes of:

(a) dealing with any adverse effect on the environment which may arise from the exercise of this consent and which is appropriate to deal with at a later stage; or

(b) ensuring the conditions of this consent are appropriate; or

(c) ensuring that the conditions of this consent are consistent with any National Environmental Standards.