IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of an application by Energy for Industry Limited for resource consent CRC121424 to discharge contaminants to air from a boiler plant at Washdyke

DECISION OF THE CANTERBURY REGIONAL COUNCIL

Hearing Commissioner John G Iseli

Date of Hearing 28th March 2012

Site Location 108 Meadows Road, Washdyke, Timaru

Appearances

Applicant:	Mr M Christensen, legal counsel Mr S Jones, Energy for Industry Ltd Mr D Pullen, air quality consultant
Submitters:	Mr G Welford Mr R Calkin
S42A Reporting Officer:	Mr K Swete

Decision Summary Consent to discharge contaminants to air is granted, subject to conditions.

The Application

Energy for Industry Limited (EFI) currently operates a boiler plant in Washdyke, Timaru to provide energy to local industry. The company has an existing resource consent CRC101564.1 to discharge contaminants to air from two 10MW (net rated output) coal-fired boilers and a 6MW back-up diesel fired boiler. That consent expires in 2045.

The application under consideration is to discharge contaminants to air from an expanded boiler plant that would include coal fired and/or wood fired boilers up to 40MW total net capacity and the 6MW back-up diesel-fired boiler. Thus the application seeks to effectively double the capacity of the boiler plant authorised by CRC101564.1, while allowing both wood and coal to be burned as fuels. A consent term consistent with that of consent CRC101564.1 is sought.

Notification and the Hearing

The application was publicly notified on 27th February 2012. The application was notified as follows:

"CRC121424 – To discharge contaminants into air from the operation of four coal or wood fired boilers with a maximum net heat output of 10 Megawatts each (40 Megawatts total). The proposed discharge location is at 122 Meadows Road, Washdyke, Timaru, at or about map reference NZMS 260, K39: 7050–4922 (BZ19: 6056-8761).

Contaminants are proposed to be discharged via bag filters and a common 45 metre high stack.

Contaminants to be discharged are combustion products including particulate matter, sulphur dioxide, oxides of nitrogen, carbon monoxide, and volatile organic compounds. It is proposed to control sulphur dioxide emissions by limiting the sulphur content of the fuel.

A consent with an expiry date of 19 March 2045 is sought, this is the expiry date of the current consent CRC101564.1.

This proposal is a replacement for consent CRC101564.1 which is for discharge to air from coal fired boilers up to 20 Megawatts in total."

A total of 26 submissions were received within the 20 working day period specified in the Resource Management Act 1991 (the Act). Eleven submissions supported the application, 13 submissions were in opposition and two submissions neither supported nor opposed the application. Six submitters opposed to the application requested to be heard.

The issues raised in submission included:

- Preference for burning of wood rather than coal in the boilers;
- Concern that effects may be more than minor;
- Lack of consistency with rules for domestic fuel burning devices;
- Effects of contaminants on residential areas of Washdyke;
- Lack of demonstrated need for the extra boiler capacity sought;
- Effects of burning treated wood; and
- Limiting the proportion of lignite to be burned as fuel.

The hearing was held on 28th March 2012 at Environment Canterbury's Timaru offices.

Site Visit

I undertook a site visit during a break in the hearing on 28th March 2012. The visit included an examination of the neighbouring Washdyke area.

Procedural Matters

The hearing was adjourned on 28th March, pending provision of a revised set of proposed conditions by the applicant. Those proposed conditions were received and consequently the hearing was closed on 10th April 2012.

The applicant has confirmed that the official physical address of the site is 108 Meadows Road, not 122 Meadows Road as notified. I have decided that the application does not need to be re-notified as the stated map reference in the notice was correct and, given the presence of the existing EFI plant on the application site, potential submitters are unlikely to have been confused regarding the location of the proposed discharge.

The Applicant's Evidence

Mr Christensen, counsel for EFI, provided legal submissions. He explained that the proposed expanded operation would provide steam energy to neighbours NZ Light Leathers Limited and DB Breweries Limited, with additional capacity to supply steam to new industries in future.

Mr Christensen agreed with Mr Swete that the discharge is classified as a discretionary activity. He stated that the provision of energy to Washdyke businesses would enable older less efficient boilers to cease operating, resulting in positive effects on air quality. Mr Christensen noted that EFI is committed to a long term vision of reducing the use of coal in its New Zealand operations and therefore the application allows for the use of wood fuel as an

alternative to coal. He stated that both fuel options need to be retained due to the variable cost and availability of wood fuels at present.

Mr Christensen stated that both Mr Pullen and Mr Swete had concluded that adverse effects of the proposed discharge would not be significant and that predicted contaminant concentrations would comply with applicable current guidelines, regardless of the fuel burned. He submitted that the discharge would not be in breach of the National Environmental Standard (NES) regulations, and would be consistent with the provisions of the Canterbury Regional Policy Statement (RPS) and the Natural Resources Regional Plan (NRRP).

It was noted that a number of submissions oppose the application on the grounds of adverse effects of climate change if coal is to be burned. Mr Christensen submitted that Section 104E of the Act states that the effects of the discharge on climate change cannot be taken into account. He considered that the application should be granted and that setting of appropriate consent conditions is the primary issue requiring attention in this case.

Mr Jones, General Manager of Industry Energy Solutions for EFI, gave evidence concerning EFI operations nationwide and the proposed expansion specifically. He explained that EFI's core business is to build, own and operate energy centres on or adjacent to customer sites under long term agreements to supply energy. He noted that EFI has invested over $50 million in energy plants over the last 12 years and has a portfolio including six bio-energy plants.

Mr Jones stated that the first 10MW coal-fired boiler at the Washdyke Energy Centre was commissioned in December 2011 to supply DB Mainland Breweries and NZ Light Leathers with steam. EFI intends to commission a second 10MW boiler in June 2012 that would burn predominantly biomass, including woodchip, sawdust and hogged forest residues.

Mr Jones explained that the ability of the boiler plant to use a broad range of fuels is important in ensuring that EFI can supply steam to Washdyke industries at a lower cost than they could produce it themselves. An advantage of a centralised plant is that steam loads from multiple users combine to smooth out the overall load. Thus the plant can be run in a more stable fashion that allows improved combustion efficiency and reduced emissions. Mr Jones stated that EFI expects significant growth in demand for steam in the Washdyke area and requires consent now to be in a secure position to offer steam to future customers.

With regard to submissions, Mr Jones confirmed that EFI has established a wood fuel supply business and is committed in the long term to reducing the use of coal. However he noted that the cost and availability of wood fuels is variable and currently wood fuel is generally more expensive than coal. Therefore EFI seeks the option to choose to burn either wood or

coal under the application. Mr Jones stated that discussions with a number of potential customers indicated that the requested additional boiler capacity is required. He confirmed that the offsets for the DB Breweries and NZ Light Leathers boiler discharges that are included in consent CRC101564.1 are also part of this proposal. Mr Jones also confirmed that the activity would comply with the performance standards for the Industrial H Zone in the Timaru District Plan and that solid fuel would be stored under cover in a manner that minimises wind blown dust.

Mr Pullen, an air quality consultant, provided evidence regarding the potential effects on the environment of discharges to air from the expanded boiler plant. Mr Pullen had prepared the assessment of effects submitted with the application and he provided a summary of his conclusions from that assessment.

Mr Pullen explained that the two 10MW boilers proposed for future installation at the plant would be capable of burning either wood or coal, or a combination of these fuels. His assessment allowed for burning wood fuel with up to 55% moisture on a wet basis. Mr Pullen stated that he calculated emissions based on scenarios where coal is burned in up to three 10MW boilers and alternatively where wood is burned in up to three 10MW boilers.

The results of contaminant dispersion modelling using the AUSPLUME Gaussian plume model were presented by Mr Pullen. He modelled the cumulative concentrations of discharges from existing Washdyke boilers plus the proposed EFI boilers, as well as the predicted concentrations caused by the EFI boilers alone. He explained that the primary contaminants of concern in this case are PM_{10} (particles having a diameter of less than 10 microns) and sulphur dioxide (SO_2).

Mr Pullen predicted a maximum PM_{10} ground level concentration (GLC) of approximately 6µg/m^3 (24-hour average) caused by all major Washdyke industrial discharges including EFI and a maximum GLC of approximately 1µg/m^3 (24-hour average) caused by the EFI boilers alone. These predicted PM_{10} GLCs are 12% and 2% respectively of the National Environmental Standard (NES) of 50µg/m^3 (24-hour average). He concluded that burning either coal or wood fuels in the boilers would not result in a significant difference in predicted PM_{10} concentrations.

Mr Pullen also predicted a peak (99.9 percentile) SO_2 GLC of 236µg/m^3 (1-hour average) caused by Washdyke industrial discharges including EFI, and a peak GLC of 36µg/m^3 (1-hour average) caused by the EFI boilers alone. The predicted peak 1-hour average SO_2 GLCs are 67% and 10% respectively of the National Environmental Standard (NES) of 350µg/m^3 (1-hour average). His modelled maximum 24-hour average SO_2 GLCs were 92µg/m^3 for all industrial

discharges and 11µg/m^3 for the proposed EFI discharges alone. These predictions may be compared to the current NZ Ambient Air Quality Guideline of 120µg/m^3 (24-hour average) and the World Health Organisation (WHO) guideline of 20µg/m^3 (24-hour average). Mr Pullen noted that the WHO guideline has not been formally adopted in New Zealand at this time.

Mr Pullen also presented the results of dispersion modelling of discharges of oxides of nitrogen and other contaminants from the proposed boilers. He concluded that the predicted contaminant concentrations are well below relevant air quality guidelines.

With regard to the NES regulations, Mr Pullen stated that the PM_{10} discharge from the EFI boiler plant would be largely offset by the closure of the existing DB Breweries and NZ Light Leathers energy centres. His calculations indicated that during normal boiler operations there would not be a significant increase to mass emissions of PM_{10} into the Washdyke Airshed under the proposal. Dispersion modelling indicated a slight decrease to maximum cumulative PM_{10} GLCs, due primarily to the proposed bag filtration and the greater height of the EFI boiler emission stacks. Because operation of the EFI boilers is not predicted to increase PM_{10} GLCs by more than 2.5µg/m^3 (24-hour average), Mr Pullen considered that the NES Regulations would not prevent granting of consent.

Overall Mr Pullen concluded that any adverse effects of contaminants discharged from the proposed boiler plant would be minor or less. He outlined several proposed technical modifications to the conditions of consent that Mr Swete had recommended in his officer's report.

Submissions

Mr Welford presented his submission opposed to the application. He expressed concern that the sought boiler capacity may not be required in reality, particularly given that the application to re-zone land to allow industrial development adjacent to the EFI plant is under appeal. He stated that the trucks required to deliver fuel to the boiler plant would cause additional pollution and traffic issues.

Mr Welford submitted that the prevailing wind would carry the discharged contaminants towards the residential area of Washdyke. He considered that gains achieved by controlling discharges from domestic fuel burning appliances could be outweighed by the effect of the proposed large scale boiler discharge.

Mr Calkin submitted that he favours the development of the Washdyke Energy Centre, but that he does not support the use of coal as a fuel for any additional boilers to be installed. He outlined advantages of burning wood chips, relative to coal, including reduced effects of CO_2

emissions on climate change, less transportation effects where local wood chips are burned, and reduced emissions of SO_2 and other contaminants.

Mr Calkin stated that the timber industry and EFI specifically should focus on making the use of wood biomass fuels viable. He sought that consent to burn coal in the boilers be declined.

A submission was also tabled from Ms Hilary Iles, who was unable to attend the hearing. Her submission stated that she is not opposed to burning wood in the boilers, but that burning of coal should not be authorised.

Section 42A Report

The Officer's Report prepared by Mr Swete had been distributed to the parties prior to the hearing. His report concluded that the potential adverse effects associated with discharges to air from the proposed boiler plant are likely to be minor.

Mr Swete conducted an audit of the dispersion modelling results presented by Mr Pullen in the assessment of effects submitted with the application. His independent modelling calculations indicated general agreement with the approximate magnitude of contaminant GLCs predicted by Mr Pullen. Mr Swete also compared the potential discharge of trace contaminants from burning of coal and wood. He found that some such contaminants (including benzene and benzo(a)pyrene) would be emitted in greater quantity from burning wood than from burning coal in the boilers. However in all cases predicted GLCs were well within relevant air quality guidelines. Mr Swete also noted that SO_2 emissions from burning wood would be much less than from burning coal.

Mr Swete's report included an analysis of the objectives and policies of the operative and proposed Canterbury Regional Policy Statements (RPS) and the Natural Resources Regional Plan (NRRP) in relation to the application. He concluded that overall the application would not be contrary to these objectives and policies. He also considered that, because the discharge (taking into account offsets) would not result in a significant increase to existing PM_{10} concentrations in the airshed, the NES regulations would not prevent granting of consent.

Mr Swete recommended that consent be granted for a term consistent with that of current EFI consent CRC101564.1. He presented a suite of suggested consent conditions, with changes outlined to incorporate technical issues raised by the applicant.

Statutory Framework and Status of the Activity

Messrs Christensen, Pullen and Swete all concluded that the application is to be considered as a discretionary activity. I accept that assessment.

Principal Issues, Evaluation and Findings of Fact

Effects of PM_{10}

The applicant proposes to fit bag filters to all boilers such that the concentration of particulate matter in the discharge is less than 50mg/m^3, adjusted to standard conditions. EFI also proposes to continuously monitor particulate matter emissions (as confirmed at the hearing) to indicate ongoing performance of the filtration system. I accept that the proposed particulate emission controls are consistent with good practice for solid fuel fired boilers of the proposed scale.

The combination of bag filtration and discharge from 45m high emission stacks is predicted to result in relatively small PM_{10} GLCs. Taking into account the proposed ongoing offset of the DB Breweries and NZ Light Leathers boiler discharges, the evidence is that there would be no significant increase in the cumulative PM_{10} concentrations caused by existing industries in the Washdyke area. I accept that there are some positive effects associated with a centralised energy centre where the scale is such that efficient boiler operation and good emission control can be achieved.

Overall I am satisfied that the EFI boiler discharge could be managed so that the effects of PM_{10} discharges into the Washdyke Airshed are minor.

Effects of SO_2

The predicted peak short-term SO_2 GLCs caused by the cumulative industrial discharges in Washdyke (including the proposed EFI discharge) are slightly above the "acceptable" target level of 230µg/m^3 (1-hour average) specified by the NRRP, set at 66% of the NES. There is significant uncertainty associated with the modelling predictions, given the simple Gaussian plume model used and the assumptions adopted. However the assumptions made regarding the EFI discharge (constant discharge at the maximum proposed SO_2 emission rate of 60kg/hr) are conservative and the modelling indicates that the proposed discharge would not result in a significant increase to existing 1-hour average SO_2 GLCs caused by industry. Provided continuous monitoring of SO_2 emissions occurs to confirm that the 60kg/hr limit is met, I am satisfied that any short-term adverse effects of the SO_2 discharge will be minor.

The modelled daily average SO_2 GLCs caused by existing Washdyke industries plus the proposed EFI discharge are within the current NZ guideline of 120µg/m^3 (24-hour average) but exceed both the WHO guideline of 20µg/m^3 (24-hour average) and the interim WHO guideline of 50µg/m^3 (24-hour average). Based on modelling with three years of Timaru meteorological data, Mr Pullen predicted a maximum daily GLC of 92µg/m^3 and a second highest GLC of 68µg/m^3. The WHO guidelines have not been formally adopted in New Zealand at this time and it is accepted that there are concerns regarding their applicability in the context of industrial discharges in this country.

Given that the proposed discharge does not cause an increase to existing SO_2 concentrations in the Washdyke area, I find that the longer-term effects (as indicated by daily average concentrations) of SO_2 emissions are acceptable at this time. However I consider that it would be appropriate to continuously monitor SO_2 emissions and to include a review clause that would allow for ambient monitoring if a revised guideline of 50µg/m^3 (24-hour average) or less was adopted in New Zealand in future.

Effects of Other Contaminants

I accept the evidence provided by Mr Pullen and Mr Swete that the effects of other contaminants (including oxides of nitrogen, metals and trace organic compounds) discharged from the boiler plant are likely to be minor. This conclusion applies when either wood or coal is burned. I find that it is appropriate to include a condition that would prevent the burning of any treated or contaminated wood fuel in the boilers.

Combustion of Wood Versus Coal

The applicant has sought that the consent allow for combustion of either wood or coal in the boiler plant as circumstances dictate. I accept that EFI is committed to burning renewable fuels where feasible, but also that there are significant difficulties at the present time regarding the availability and cost of wood biomass fuel to supply a boiler plant of this size. Given that the predicted contaminant GLCs are within relevant air quality guidelines if either fuel is burned, I find that consent should allow for both fuel types to be used in the boiler plant.

A number of submitters have expressed a preference for burning of renewable wood fuels rather than coal. I accept that the burning of carbon neutral wood fuels has benefits in reducing the potential effects of greenhouse gases on climate change, relative to combustion of coal. However that is an issue that should primarily be addressed on a national scale rather

than via individual resource consent applications. In this case I am not satisfied that a reliable source of local wood fuel would be available in sufficient quantity and quality to service the needs of the boiler plant in the near term.

Section 104E of the Act states that when considering an application relating to the discharge of greenhouse gases into air, a consent authority *"must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases, either –*

(a) In absolute terms; or

(b) Relative to the use and development of non-renewable energy.

I have considered Section 104E and find that consent may be granted to burn both wood biomass and coal fuel in the boiler plant, enabling sufficient fuel choice to ensure viable operation of the energy centre.

Monitoring and Conditions of Consent

During the course of the hearing the applicant proposed to undertake continuous particulate matter monitoring in the boiler discharge. Such monitoring is becoming common practice for large scale solid fuel fired boiler plants and allows ongoing performance of the boiler and bag filtration equipment. I find that continuous particulate monitoring is appropriate in this case, along with annual testing that will enable calibration of the particulate meter and assessment of compliance with the emission limits.

EFI also proposed at the hearing to monitor the SO_2 emission rate directly, rather than be subject to the condition recommended by Mr Swete limiting the sulphur content of coal to 0.5% by weight. I agree that such an approach would afford greater flexibility and would also be more directly based on potential effects. Taking into account the scale of the proposed discharge, the magnitude of predicted cumulative SO_2 concentrations and the uncertainties associated with such predictions, I consider that continuous monitoring by SO_2 meter is appropriate in this case. The data gathered by such continuous monitoring would also be valuable in future, particularly if the New Zealand 24-hour average SO_2 guideline was revised.

I have considered the need for ambient SO_2 monitoring in this case, given the cumulative concentrations predicted. I find that such ambient monitoring is not required at this time, provided continuous SO_2 emission monitoring occurs. However I have included a review condition that would require ambient monitoring of sulphur dioxide for a period of at least one year in the event that there is a change to any national environmental standard (NES) or ambient air quality guideline set by the New Zealand Government or the Canterbury Regional

Council that sets a guideline or standard for sulphur dioxide of less than or equal to 50µg/m^3 (24 hour average).

I have decided that it is appropriate to require "offset" of the NZ Light Leathers and DB Breweries boiler discharges according the same terms of existing consent CRC101564.1. Offset of these existing boiler discharges (having significantly greater PM emission concentrations because there is no bag filtration) results in cumulative PM_{10} concentrations that are unlikely to increase significantly due to the EFI discharge.

Considerable discussion occurred at the hearing regarding the moisture content of potential wood biomass fuels to be burned in the energy centre and the consequent effect on contaminant emissions. EFI indicated that any relatively "wet" wood fuels would be supplemented by coal and/or dry hogged wood to enable efficient operation of the boiler plant. I also note that the proposed conditions regarding opacity and particulate limits would need to be met regardless of the fuel to be burned. Consequently I have decided not to specifically impose a wood moisture content limit in this case.

A well operated boiler plant subject to bag filtration is expected to be capable of achieving discharge opacity no darker than the Ringelmann Shade 1, except when the bag-filter is bypassed. A condition is imposed accordingly. It is appropriate to authorise filter bypass under limited conditions. I have decided to set an output limit of 30% of boiler capacity for bypass during boiler commissioning or start-up, in accordance with information provided verbally at the hearing.

During the hearing Mr Jones confirmed that coal and wood fuel would be stored under cover and handled in a manner that prevents any off-site nuisance caused by windblown particulate matter. I have determined to impose a condition accordingly. My site visit confirmed that the existing coal reception and handling facilities are consistent with good practice.

Consent Duration

The applicant has requested that the term of consent be consistent with existing consent CRC101564.1, resulting in an effective term of consent of approximately 33 years. Mr Swete considers that such a term is appropriate in this case. Taking into account the level of mitigation proposed and the conditions of consent I intend to impose, I find that consent may be granted for this duration, subject to a review condition that would allow any significant issues to be addressed should they arise during the term of consent. As discussed earlier, the review condition would allow for ambient monitoring of SO_2 if a significantly reduced 24-hour average guideline was set in New Zealand in future.

The Regional Policy Statement and Natural Resources Regional Plan

Provided the applicant complies with the conditions of consent imposed, I find that the activity would not be contrary to the objectives and policies of the NRRP and the RPS.

Policy 9 of the current RPS promotes measures to reduce or mitigate the effects of CO_2 from the use of carbon based fuels. I agree with Mr Christensen that little weight should be given to this policy. Such a policy is not included in the proposed RPS because changes to the Act require local authorities to plan for the effects of climate change, rather than consider the adverse effects of greenhouse gas discharges on climate change.

National Environmental Standards

With regard to the NES for Air Quality, I accept the analyses of Mr Swete and Mr Pullen that the NES would not prevent consent from being granted in this case. The proposed discharge (including offsets) is not predicted to cause a significant increase to existing PM_{10} concentrations in the airshed and the EFI discharge alone is not predicted to cause PM_{10} GLCs exceeding 2.5µg/m^3 (24-hour average) .

Part 2 of the Act

I conclude that any adverse effects of the proposed discharge, subject to the conditions imposed, can be controlled to the extent that they are acceptable in relation to the purpose and principles of the Act (Part 2). With regard to Section 7 of the Act, I consider that mitigation measures are proposed (and required by conditions) that would enable amenity values and the quality of the environment to be adequately maintained.

Decision

I consider that the proposed activity, subject to conditions, can be undertaken in a manner that is consistent with the Act's purpose of sustainable management of natural and physical resources. Having considered all the evidence and the submissions together with the statutory documents and other matters I am required to consider under the Resource Management Act 1991, I determine that consent CRC121424 is granted for a term expiring on 29th March 2045, subject to the following conditions.

CRC121424

GENERAL

1. This consent shall not be exercised concurrently with resource consent CRC101564.1.

2. The discharges shall be only contaminants from boilers located 108 Meadows Road, Washdyke, Timaru, at map reference NZMS 260 K39: 7050-4922 [NZTopo BZ19: 6056-8761].

3. The solid fuel-fired boilers shall:

a. Have a combined net useful energy output of no greater than 40 megawatts;
b. Be fuelled by either coal or woody biomass material; and
c. Burn woody biomass material that has not been treated with preservatives, impregnated with chemicals, or that contains glues, paints, stains or added oils.

4. All discharges shall be directed vertically into the air and shall not be impeded by any obstruction above the stacks that decreases the vertical velocity below that which would occur in the absence of such obstruction.

5.
a. The discharges shall not cause particulate matter or odour, which is offensive or objectionable, beyond the boundary of the property on which the consent is exercised.
b. All solid fuel shall be stored under cover and handled in a manner that enables compliance with Condition 5(a).
c. Ash from the boilers shall be contained and managed to prevent the discharge of fugitive dust and particulate matter.

6. The boilers and associated equipment shall be serviced at least once every year, by a person competent in the servicing of such appliances. This servicing shall include:

a. Internal cleaning and replacement or repair of damaged equipment and services as necessary;
b. Adjustment of the fuel to air ratio to optimise energy efficiency and to minimise the emission of products of incomplete combustion;
c. Adjustment of boiler monitoring equipment consistent with the intent of this consent; and
d. Servicing of bag filters in accordance with the manufacturer's recommendations, including inspection of the condition of all bags and replacement or repair of any defective bags.

Servicing reports shall be prepared and copies shall be provided to the Canterbury Regional Council on request. Confirmation that this service has been undertaken and at least a summary of the service reports shall be provided in the Annual Environmental Report required by Condition 42.

SOLID-FUEL FIRED BOILERS

7. The solid-fuel fired boilers shall have a maximum total net output of not more than:

a. 40 megawatts; or
b. 36.5 megawatts, at any time when consent CRC930053 is being exercised to discharge contaminants into air from a boiler plant; or
c. 37.8 megawatts when the activities described in conditions 2 to 10 inclusive of consent CRC951898 are occurring; or
d. 34.3 megawatts when consent CRC930053 is being exercised and when discharges described in conditions 2 to 10 inclusive of consent CRC951898 are occurring.

8. The discharges to air from the solid-fuel fired boilers shall be via stacks with outlets not less than 45 metres above ground level.

9. Combustion gases from the solid-fuel fired boilers shall be discharged to air via bag-filters.

10. The discharges from the solid-fuel fired boiler stacks shall have efflux velocities at the combined maximum continuous rating of two boilers of not be less than 19 metres per second.

11. The opacity of the emissions from the solid-fuel fired boiler stacks shall not be darker than the Ringelmann Shade 1 as determined in accordance with the New Zealand Standard 5201:1973, except when the bag-filter is bypassed in accordance with Condition 12.

12. Bypassing of the solid fuel-fired boiler bag filters shall only occur:

a. In the event of an emergency situation such as if the flue gas temperatures are sufficiently high to damage filter bags but after boiler fuelling is stopped;
b. When drying out green refractory during commissioning of a boiler, following repairs to a boiler refractory, and during subsequent re-bricking, and only up to two days after commencing dry out at minimum output not exceeding 30 percent of a boiler's capacity;
c. In the event of bag-filter malfunction, providing the bypass shall not occur for more than two hours at any time; and
d. During start-up of a boiler until the flue gas temperature exceeds 140 degrees Celsius but only at a minimum output not exceeding 30 percent of boiler capacity.

13. The concentration of total suspended particulate in the solid-fuel fired boiler stacks shall not exceed 50 milligrams per cubic metre corrected to zero degrees Celsius and 101.3 kilopascals pressure on a dry gas basis adjusted to 12 percent carbon dioxide or eight percent oxygen by volume, except when the bag filter is bypassed in accordance with Condition 12.

14. The discharge of total suspended particulate from the solid fuel-fired boilers shall not exceed a combined total of 4.5 kilograms per hour.

15. The maximum combined sulphur dioxide emission rate shall not exceed 60 kilograms per hour.

16. Compliance with the sulphur dioxide emission rate limit in Condition 15 shall be demonstrated by continuous in-stack sulphur dioxide monitoring in accordance with Conditions 28 to 30 and by means of calculation. The maximum possible sulphur dioxide emission rate may be calculated from the maximum burning rate of the coal at peak boiler capacity and the sulphur content of that coal. A summary of data demonstrating compliance with Condition 15 shall be presented in the Annual Environmental Report required by Condition 42.

17. The solid-fuel fired boiler stacks shall be fitted with particulate measurement devices that give a continuous display and record of the particulate emission rate of the discharge. A broken bag detection system may be incorporated into the particulate measuring device.

18. The bag filter units shall incorporate a leakage detection system incorporating a visible and audible alarm. The leakage detection system shall ensure, as far as practicable, that any damage or deterioration to filter bags or other problems that could cause an exceedance of the 50 milligrams per cubic metre total particulate emission standard is detected.

19. The method of continuous measurement of particulate matter emission rate, including the method of calibration and maintenance of the system, shall be provided to the Canterbury Regional Council within two months of installation of the particulate measurement device.

20. During periods when boiler bag-filters are bypassed:

a. The dates and times that a bag-filter is bypassed and the reasons for the bypass shall be recorded and those records maintained; and
b. These records shall be made available to the Canterbury Regional Council on request and shall be included as part of the Annual Environmental Report required in accordance with Condition 42.

21. The consent holder shall:

a. Within six months of the date of commencement of operation, provide data on the content by weight of the following trace elements in the coal to be burned in the solid-fuel fired boiler plant: arsenic, beryllium, cadmium, chromium (total), lead, nickel, mercury, and thallium;
b. Within 30 days of a change in the source of coal or coal blend, provide equivalent data for the new coal or coal blend to the Canterbury Regional Council prior to its use; and
c. Report changes to fuel as part of reporting required in accordance with Condition 42.

DIESEL COMBUSTION

22. The discharge from the diesel fired boiler shall be of net output capacity not more than six megawatts.

23. The discharge to air from the diesel fired boiler shall be via a stack with:

a. Outlet not less than three metres above any roof level within 50 metres; and
b. Outlet at a height of at least 15 metres above ground level; and
c. Exit diameter of not greater than 0.5 metres.

24. The maximum diesel burning rate shall not exceed 730 litres per hour.

25. The concentration of sulphur in the diesel fuel shall not exceed 0.006 percent by weight.

26. The opacity of the emissions from the diesel fired boiler stack shall not be darker than the Ringelmann Shade 1 as determined in accordance with the New Zealand Standard 5201:1973, except for a period not exceeding a total of two minutes in each hour of operation.

STACK TESTING

27. The consent holder shall install sampling ports in the boiler-stacks in accordance with Australian Standard AS4323.1-1995, or equivalent method, for provision and location of sampling ports, services, platforms and access as well as provision of single phase electrical supply.

28. Continuous in-stack monitoring of sulphur dioxide emission rates shall be undertaken in the solid-fuel fired boiler stacks.

29. The method of continuous measurement of sulphur dioxide emission rates in accordance with Condition 28 shall comply with:

a. USEPA Method 6C “Determination of Sulphur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)” or equivalent standard; or
b. ISO 7935:1992 “stationary source emissions – determination of the mass of sulphur dioxide – performance characteristics of automated measuring methods”.

30. Sulphur dioxide emission rates shall be calculated at all times the solid-fuel fired boilers are operating, using in-stack sulphur dioxide measurements. The emission rates shall be calculated for the combined boiler discharges as a one-hour average and a 24-hour average.

31. The discharges from the solid-fuel fired boiler-stacks shall be tested, for the concentration of total suspended particulate matter and the concentration of sulphur dioxide, within 12 months of the date of exercise of this consent and thereafter at least once every 12 months.

32. Measurement of the solid-fuel fired boiler discharges in accordance with Condition 31 shall occur when the boilers being tested are operating at a rate at least at 50 percent of maximum continuous rating.

33. Testing and analysis of samples shall be carried out by an organisation and laboratory accredited by International Accreditation New Zealand (IANZ) for the tests and analyses involved.

34. The method of sampling and analysis for total particulate matter in accordance with Condition 31 shall comply with USEPA Methods 5 or 17, or ISO 9096:2003, ASTM D3685, or equivalent method, provided that such a methodology shall be provided to the Canterbury Regional Council on request. The testing time for each particulate sample shall be two hours continuous and at least three samples shall be collected.

35. The method of sampling and analysis for sulphur dioxide in accordance with Condition 31 shall comply with USEPA Method 6, 6A or 6C, or equivalent method, provided that such a methodology shall be provided to the Canterbury Regional Council on request. The annual sampling of sulphur dioxide required by Condition 31 shall be independent of the continuous in-stack monitoring required by Condition 28. The testing time for each sulphur dioxide sample shall be one hour continuous and at least three samples shall be collected.

36. Results of sampling in accordance with Conditions 34 and 35 shall be adjusted to zero degrees Celsius, 101.3 kilopascals and 12 percent carbon dioxide or 8 percent oxygen by volume on a dry gas basis and reported as a mass emission expressed as kilograms per hour.

37. Volumetric flow of combustion gas and gas temperatures during each particulate and sulphur dioxide emission test in accordance with Conditions 34 and 35 shall be determined and recorded.

38. The oxygen (or carbon dioxide) concentrations in combustion gases shall be continuously monitored and recorded during each particulate and sulphur dioxide emissions test undertaken in accordance with Conditions 34 and 35.

39. The results of annual emission monitoring in accordance with Conditions 31 to 38 shall be presented as part of an emission test report. The results of the emissions tests and a description of the testing methods shall be provided to the Canterbury Regional Council within 40 working days of the testing being completed. A summary of the results of annual emissions tests, including comparison to continuous particulate matter and sulphur dioxide measurements, shall also be included in the Annual Environmental Report required by Condition 42.

RECORDS

40. The consent holder shall keep a record of:

a. The tonnage and type of solid-fuel burned per month;

b. The average and maximum hourly rate of consumption of each type of solid-fuel based on both the average and maximum steam production rates;
c. The average calorific value of each solid-fuel used;
d. The sulphur content of any coal used, in percent; and
e. The daily amount of diesel burned, in litres.

41. The consent holder shall keep a record of any complaints relating to particulate matter or odour from the discharges. This record shall include:

a. The location where the particulate matter or odour was detected by the complainant,
b. The date and time when the particulate matter or odour was detected,
c. A description of the wind speed and wind direction when the particulate matter or odour was detected by the complainant,
d. The most likely cause of the particulate matter or odour detected, and
e. Any corrective action undertaken by the consent holder to avoid, remedy or mitigate the effect of the particulate matter or odour detected by the complainant.

All the recorded data shall be retained and shall be made available to the Canterbury Regional Council upon request.

42. The consent holder shall, not later than 30 September of each year, provide an Annual Environmental Report to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, setting out a summary of results (with analyses) and comments on all requirements, including emission tests undertaken in relation to this consent over the previous year.

LAPSING & REVIEWING

43. This consent shall lapse ten years after the date of commencement unless the consent is given effect to before that lapsing date pursuant to section 125 of the Resource Management Act 1991.

44. The Canterbury Regional Council may, once per year, on any of the last five working days of February or August, serve notice of its intention to review the conditions of this 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 it is appropriate to deal with at a later stage; and/or
b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; and/or
c. Requiring monitoring in addition to, or instead of, that required by the consent; and/or
d. Requiring ambient monitoring of sulphur dioxide for a period of at least one year in the event that there is a change to any national environmental

standard (NES) or ambient air quality guideline set by the New Zealand Government or the Canterbury Regional Council that sets a guideline or standard for sulphur dioxide of less than or equal to 50µg/m^3 (24 hour average), if the boiler plant is routinely fired on coal; and/or

e. Requiring measures to reduce sulphur dioxide emissions from the solid fuel-fired boiler plant when fired on coal to a level that is predicted to comply with the standard or air quality guideline described in Condition 44(d).

DURATION

45. This consent shall expire on 29th March 2045.

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John G Iseli, Commissioner

Dated this 26th day of April 2012