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shaping the future

Date 28 June 2019

Greater Wellington Regional Council
PO Box 11646
Wellington 6142

Dear Claire/Jeff

Subject: Further Information Response, Air Discharge Permit WGN190198

1 Introduction

Greater Wellington Regional Council (GWRC) has engaged Pattle Delamore Partners Limited (PDP) to undertake a technical peer review of air discharge permit application number WGN190198 made by NCI Packaging (NZ) Limited (NCI). As a result of that review GWRC has requested further information under section 92(1) of the Resource Management Act 1991 (RMA).

2 Statutory Assessment

Q1. *In accordance with Section 2(1)(g) of Schedule 4 of the RMA 1991, please provide an assessment of the activity against any relevant provisions of the documents referred to in Section 104(1)(b) of the RMA i.e. a full statutory assessment considering the proposed discharge in terms of the relevant objectives and policies of the NES Air Quality (NESAQ), the Regional Policy Statement (RPS) operative and proposed regional plans (RAQMP and PNRP respectively). Please note that the assessment in the AEE against the rules in the regional plans is considered insufficient for this assessment as per previous correspondence.*

2.1 s.104(1) Part 2 Resource Management Act 1991 (RMA)

The RMA outlines the functions, powers, and duties of consenting authorities to be exercised in order to give effect to the purpose and principles of the RMA. The RMA defines a hierarchy whereby priority is given to the matters set out in Part 2 (Purpose and Principles).

Part 2 Matters

The purpose of the RMA, set out in Section 5, is to promote the sustainable management of natural and physical resources, which includes enabling "people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety." This must be achieved in the context of section 5(2), in particular the responsibility of (c) for "avoiding, remedying, or mitigating any adverse effects of activities on the environment."

The broader principles of the RMA are set out in Sections 6-8 of the RMA.

It is considered that the proposal being applied for will achieve sustainable management of natural and physical resources for the following reasons:

- The proposal provides for the social, economic and cultural wellbeing of New Zealand by producing valuable goods for use in New Zealand.

- Allowing this proposal allows for the maintenance of the quality of the environment

2.2 National Environmental Standards

The National Environmental Standard (Air Quality) (NESAQ) is a regulation made under the Act which sets a guaranteed minimum level of health protection for all New Zealanders. It came into effect on 8 October 2004. Since that time two amendments have been made to the NES. .

The NESAQ places constraints on the granting of resource consents to discharge PM_{10}, Carbon Monoxide (CO), Oxides of Nitrogen (NO_x) and volatile organic compounds (VOCs) where the discharge, if permitted, is likely to be a principal source of any of these contaminants and the airshed either breaches, or the discharge is at any time likely to cause the airshed to breach, the ambient air standard for one of these contaminants.

The ambient concentrations that are likely to be experienced during the manufacturing of aluminium cans are discussed in Section 5 of the Assessment of Environmental Effects (AEE). NCI's contribution to the airshed together with the ambient concentrations of PM_{10}, CO, and NO_x are unlikely to cause the concentrations to approach the threshold values.

The activity has been undertaken for around 8 years and any effects are already included in ambient monitoring levels. The site is located in an area that does not breach the NES, and as such there is no reason to not grant the air discharge permit under the NES.

2.3 Regional Policy Statement

The Wellington Regional Policy statement (RPS) sets out to achieve the purpose of the RMA by providing an overview of the region's resource management issues, and outlining policies and objectives to integrate the management of these issues across the Greater Wellington region.

The RPS outlines the resource management issues of significance to the region and provides a framework for managing the natural and physical resources of the region in a sustainable manner. Further to this, the RPS identifies objectives, policies and methods which are designed to achieve integrated management of the natural and physical resources of the whole region.

Chapter 3.1 of the RPS relates to Air Quality and is the most relevant chapter to this application. NCI considers that the application is consistent with the objectives and policies of this chapter, in particular:

Policy 1 discusses reverse sensitivity which is applicable to NCI's situation as the residential area of Mountbatten Grove is located too close to the industrial area. Nothing can be done to remedy this situation now but this should have been considered at the time of the district zoning application.

Policy 2: Reducing adverse effects of the discharge of odour, smoke, dust and fine particular matter regional plans.

The current controls in place at NCI in relation to air discharges including good dispersion of emissions and consistent operation are in line with Policy 2. GWRC will most likely apply conditions to the consent if it is granted which will ensure compliance with Plan objectives.

Section 4.2 of the RPS relates to matters to be considered in relation to regulatory policies however there aren't any regulatory policies regarding air quality in this section.

NCI considers that the application is consistent with the objectives and policies of the RPS as discharges of VOCs and odour from the site are managed, so that the discharge concentrations will be at an acceptable level. The discharge is also well within the NESAQ guidelines and the MfE residential odour guideline.

Overall, NCI considers that the application is consistent with the objectives and policy of section 3.1 and 4.2 of the RPS.

2.4 Regional Air Quality Management Plan for the Wellington Region

The Regional Air Quality Management Plan (RAQMP) contains several objectives, policies and rules which are relevant to this application. This plan provides for the discharge of contaminants to air from the operation of the aluminium can manufacturing plant as a discretionary activity. Only the main objectives and policies of interest in this plan have been discussed.

Policies 4.2.1 and 4.2.2 require regard to be given to the Regional Ambient Air Quality Guidelines (RAAQG) when managing the region's air resource. These guidelines set out target levels of specified contaminants in the air, and reflect the cumulative effects of all activities. The guidelines have two categories of assessment – 'maximum acceptable levels', and 'maximum desirable levels'. Desirable levels are appropriate guidelines for rural areas and other areas with good air quality, while maximum levels are appropriate in areas where existing activities have a significant effect on air quality. The relevant guideline for NCI's site is the maximum desirable levels as it is in an area of good air quality. NCI considers the application meets these policies as air quality will not be adversely affected by contaminants as predicted maximum ground level concentrations are well within guideline levels.

The maximum acceptable limits in the Regional Ambient Air Quality Guidelines (RAAQG) are either the same or greater than the NESAQ for the same contaminants (with the NESAQ permitting certain exceedances for short periods of time across a 12-month period). NCI's discharges are well within both the RAAQG and the NESAQ, and are thus consistent with Policies 4.2.1 and 4.2.2.

Policy 4.2.4 seeks to avoid, remedy or mitigate any adverse effect of the discharge of contaminants to air that is noxious, dangerous, offensive or objectionable. Policy 4.2.7 seeks to avoid, remedy or mitigate any adverse effect of the discharge of contaminants to air on amenity values. As discussed above, the predicted ambient contaminant concentrations are all well within the guidelines and therefore will not cause adverse effects off-site. The consistent nature of the process and high levels of dispersion mean the discharge will be remedied and mitigated to a level that ensures the effects will not cause odours that are offensive and objectionable beyond the boundary.

Policy 4.2.9 To give particular consideration, where relevant, to the volume, composition and characteristics of the discharge, including the maximum ground level concentration of significant contaminants in the discharge, especially hazardous contaminants identified in Appendix 1 of the plan and any contaminants listed in Appendix 2 of the plan. Several of the contaminants in the discharge are listed as a hazardous air contaminant in Appendix 1 and particulate matter, carbon monoxide and nitrogen oxide are listed in Appendix 2 as there are Regional Ambient Air Quality Guidelines which relate to these contaminants. The discharges have been robustly assessed and modelled, and the results indicate that all maximum ground level concentrations (max GLCs) will be well within the NES and relevant health guidelines; these being more relevant and more conservative than those in the RAQMP.

Policy 4.2.10 lists the recommended approach to setting permit conditions as follows:

Condition Approach	**NCI Comment**
Set emissions limits where appropriate	The current discharge permit did not require limits and these are not considered necessary considering the level of emissions discharged.
Promote the Best Practicable Option (BPO) for discharges (as defined in section 2 of the Resource Management Act),	NCI is already using the best practicable option by ensuring good capture and dispersion of emissions.
To minimise emissions, especially of hazardous air contaminants identified in Appendix 1,	As discussed above the emissions are not significant.

Condition Approach	NCI Comment
To require an operations manual and contingency plans if appropriate, and	NCI has an operations manual and listed actions that can be undertaken if there is a change in plant conditions.
To require, where relevant, adherence to particular guidelines or codes of practice	There are no specific codes of practice for Can manufacturing emissions.
To require appropriate effects based monitoring if appropriate.	The level of emissions from NCI are not significant and do not require on-going monitoring. Raw material usage is currently reported annually.

NCI considers that the proposal is consistent with the objectives and policies of the RAQMP.

2.5 Proposed Natural Resources Plan

2.5.1 Objectives

Objective	NCI Comment
Objective O39 Ambient air quality is maintained or improved to the acceptable category or better in Schedule L1 (ambient air).	The emissions from NCI are predominantly solvent based volatile organic compounds (VOC). The Ambient air quality standards in Schedule L1 related to particulate and combustion gases predominantly. NCI's modelling assessment shows compliance with ambient air quality guidelines.
Objective O40 Human health, property, and the environment are protected from the adverse effects of point source discharges of air pollutants.	NCI's modelling assessment shows compliance with ambient air quality guidelines.
Objective O41 The adverse effects of odour, smoke and dust on amenity values and people's well-being are reduced	NCI has assessed odour discharges in the assessment of environmental effects and the current controls reduce adverse effects off-site. NCI does not have smoke or dust discharges.

2.5.2 Policies

Policy	NCI Comment
Policy P52: Managing ambient air quality Ambient air quality shall be managed to protect human health and safety by:	
(a) maintaining the acceptable category or better identified in Schedule L1 (ambient air) for the specific contaminants, and	(a) as discussed above in the objectives
(b) improving unacceptable or poor ambient air quality to at least the acceptable category or better identified in Schedule L1 (ambient air), and	(b) as discussed above in the objectives

Policy	NCI Comment
(c) managing the discharge of other contaminants so that the adverse effects on human health, including cumulative adverse effects, are minimised.	(c) as discussed above in the objectives
Policy P55: Managing air amenity Air quality amenity in urban, rural and the coastal marine areas shall be managed to minimise offensive or objectionable odour, smoke and particulate matter, fumes, ash and visible emissions.	As discussed above in the objectives
Policy P58: Industrial discharges Industrial point source discharges and fugitive emissions into air will be minimised by using good management practices.	NCI has controls in place as discussed in the Operations and Maintenance Manual to minimise emissions for both point and fugitive sources.
Policy P59: Industrial point source discharges The significant adverse effects from industrial point source discharges of hazardous air pollutants beyond the boundary of the property where the discharge is occurring, including any noxious or dangerous effects on human health or the environment, shall be avoided.	NCI's dispersion modelling assessment has shown that VOC discharges are well within the ambient air quality criteria.
Policy P61: National Environmental Standard for Air Quality When considering a resource consent application for a discharge into air in a polluted airshed, including the Masterton Urban Airshed (shown on Map 25), the Wellington Regional Council shall give effect to the National Environmental Standard for Air Quality by allowing the offsetting of new discharges of PM_{10} if the ground level concentrations exceed 2.5 µg of PM_{10}/m^3 of air. The offsets shall be…..:	NCI does not have PM_{10} emissions nor is in the Masterton airshed.

2.5.3 Rules

The rules of the Proposed Natural Resources Plan have been discussed in the AEE.

3 Executive Summary for Notification

Q2. *Please provide an Executive Summary which can be provided as an attachment to the notification to the affected persons – it is understood that this is in progress and a first draft has been returned by GWRC with comments and recommendations. The Executive Summary is required so that it can be circulated to affected persons and provided sufficient information for the proposed discharge to be understood by the general public.*

A separate document has been produced.

4 Production Rates

Q3. Lacquer, base coat and varnish use rates. Can production rate.

a) *Define the type and rate of use internal lacquer (kg/hr), external base coat and varnish application (kg/hr) being applied during the emission monitoring.*

Table 4-1 Production Data During Testing

Date	Time	Size	Int Lacquer	kg/hr	Ext Base Coat	kg/hr	Varnish	kg/hr
13/11/2018	11.00 AM	35x98	epoxy	1.2	white	2.7	gloss	0.96
	1.00 PM	35x98	epoxy	1.2	white	2.7	gloss	0.96
	3.00 PM	35x98	epoxy	1.2	white	2.7	gloss	0.96
14/11/2018	7.00 AM	35x149	epoxy	3.0	white	4.14	gloss	1.2
	9.00 AM	35x149	epoxy	3.0	white	4.14	gloss	1.2
	11.00 AM	35x149	epoxy	3.0	white	4.14	gloss	1.2
	1.00 PM	35x149	epoxy	3.0	white	4.14	gloss	1.2
	3.00 PM	35x149	epoxy	3.0	white	4.14	gloss	1.2
5/12/2018	7.00 AM	31.65x165.1	epoxy	0.9	white	2.76	gloss	1.38
	9.00 AM	31.65x165.1	epoxy	0.9	white	2.76	gloss	1.38
	11.00 AM	31.65x165.1	epoxy	0.9	white	2.76	gloss	1.38

b) *Define the type and number of cans which were lacquered and/or base coated and/or varnished during the emission monitoring.*

See Table 4-1 for can type. All Cans were run at 100 cans per minute.

TPH & VOC monitoring on the main stack was 13/11/2018: 9:17 - 10:17 & 10:34 - 11:34 ~12,000 Cans

TPH & VOC monitoring on internal lacquer was 14/11/2018: 8:36 - 9:36 & 9:52 - 11:20 ~14,800 Cans

Odour monitoring was 5/12/2018: 10:36 - 11:30 main stack and 11:35 - 12:30 internal lacquer ~10,900 Cans

c) Clarify whether emission testing was undertaken during low, typical or high production rate.

During testing, the production rate was 100 Cans per minute for all of the runs which is the maximum speed. Production wise most Cans are produced at 100 cans per minute but there are a couple of sizes where it is less, see Table 4-2.

d) *Define the maximum anticipated rate of use internal lacquer (kg/hr), base coat and varnish application (kg/hr).*

Maximum usage per hr = 6 litres of internal lacquer, 6.6 litres of base coat and 3.0 litres of varnish when on large Cans 53 x 180 to 200 mm. NCI has not made these Cans very often over the last 2 to 3 years. The sizes during the testing programme are the most common.

e) *Define the type and maximum number and of cans (number/hour) which will be produced at the plant.*

Table 4-2 Can Production rates, Cans per minute (cpm)

Can Dimensions (diameter x height)	Production Rate
22 x 58, 65, 70	100 cpm
27.2 x 114	100 cpm
31.65 x 78, 78.75,	100 cpm
31.65 x 151.5, 152, 163.1, 163.3, 163.6, 163.7, 164.3, 165.1	100 cpm
35 x 70, 95, 98, 106, 120, 127, 149	100 cpm

Can Dimensions (diameter x height)	Production Rate
38 x 68, 70	85 cpm
40 x 90, 130, 165	100 cpm
45 x 130, 150, 165, 180, 190,	45x130/150/165 =100 cpm 45x180/190 =85cpm
53 x 110, 155, 170, 180	53x110/155 =100cpm 53x170/180 =85cpm

5 Lacquers, Base Coats and Varnish

Q4. ***Use of other types of lacquers and base coats and varnish and potential impacts of unmonitored contaminants***

a) *List the additional types of internal lacquer, external base coat and varnish which are used at the plant in any significant volume.*

The other coatings annual usage is listed in the table provided in the last compliance report reproduced as Table 5-1 in this report.

Although the PPG8460 PAM shows as being a significant volume to the middle of 2018 its usage has dropped off to the level that it hardly used any more.

Table 5-1 Other Coating Usage July Previous Year to End of June of the Year Stated

Coating	2016 (kg)	2017 (kg)	2018 (kg)
PPG3046-006A WHITE BASE COAT	7115	525	0
PPG3046-006B WHITE **BASE COAT**	1373	6740	5600
PPG3574-601A COATING Silver Aerosol **basecoat**	52.5	0	333
PPG3602-801A **BASECOAT** CLR	1015	43	401
PPG3603-801A COLOURLESS GLOSS **VARNISH**	3012	2648	2474
PPG3603-803A/18 **VARNISH** MATT FINISH	148	255	66
PPG4613-608A COATING SILVER Aerosol **Basecoat**	12.9	0	81
PPG4619-802A/28K COATING VARNISH	49.5	0	0
PPG4619-803A/28K SEMI GLOSS VARNISH	11.5	0	0
PPG7407-303A/27K COATING	1819	0	0
PPG7407-310A/27K COATING **Internal Lacquer**	1255	3576	3348
PPG8460 PAM (A24.7K+B1.3K) COATING **internal Lacquer**	1267	1642	1063
PPG9430-801/A - AE-**BASECOAT** clear 9430	65	649	284
Total	17195	16078	13648

Note: the yellow highlighted Coatings are the ones used during the testing programme

b) *List the main constituents of these additional types of lacquers, base coats and varnishes and cross check those against those tested in the emissions monitoring.*

The yellow highlighted Coatings are the ones used during the testing programme

Table 5-2 Other Internal Lacquer Volatile Ingredients

PPG7407-310A Epoxy 30 – 60% 2 methoxy 1 methyl ethyl acetate (PGMEA), CAS 108-65-6 10 – 30% 4-Methyl-4-hydroxy-2-pentanone (diacetone alcohol), CAS 123-42-2 1 – 10% n-Butanol, CAS 71-36-3 1 – 10% Ethyl benzene, CAS 100-41-4 1 – 10% Xylene, CAS 1330-20-7 1 – 10% 1 methoxy 2 propanol, CAS 107-98-2 1 – 10% Dimethyl glutarate, CAS 1119-40-0 <1% Formaldehyde, CAS 50-00-0 <1% Phenol, CAS 108-95-2	PPG8460-302A+ PPG8460-303A 50 – 100% N-methyl-2-pyrrolidone, CAS 872-50-4 10 - 12.5% 2-methoxy-1-methylethyl acetate (PGMEA), CAS 108-65-6 15 – 20% Xylene, CAS 1330-20-7 7 – 10% Ethyl benzene, CAS 100-41-4 7 – 10% propylene carbonate, CAS 108-32-7

Table 5-3 Other Varnish Volatile Ingredients

Gloss over varnish PPG3603-801A 25 – 50% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 3 – <5% n-Butanol, CAS 71-36-3 2 – <3% Naphthalene, CAS 91-20-3 1 – <2 1,2,4-trimethyl benzene, CAS 95-63-6 0.1-<0.2% Formaldehyde, CAS 50-00-0	Matt over varnish PPG3603-803A 25 – 50% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 3 – <5% n-Butanol, CAS 71-36-3 2 – <3% Naphthalene, CAS 91-20-3 1 – 2% 1,2,4-trimethyl benzene, CAS 95-63-6 0.1 – 0.2 Mesitylene, CAS 108-67-8 0.1 - 0.2% Formaldehyde, CAS 50-00-0

Table 5-4 Other Basecoat Volatile Ingredients

White Basecoat PPG3046-006B 10 – 30% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 1 – <10% 2-(2-butoxyethoxy) ethanol, CAS 112-34-5 1 – <10% Dimethyl glutarate, CAS 1119-40-0 1 – <10% isobutyl alcohol CAS 78-83-1 <1% Naphthalene, CAS 91-20-3 <1% Xylene, CAS 1330-20-7 0 – 10%, 2-butanone oxime, CAS 96-29-7	Clear basecoat PPG3602-801A 25 – 50% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 10 - 12.5% 2-methoxy-1-methylethyl acetate, CAS 108-65-6 3 – 5% n-Butanol, CAS 71-36-3 1 - 2% Naphthalene, CAS 91-20-3 1 – <2% 1,2,4-trimethyl benzene, CAS 95-63-6 0.1 – 0.2% Formaldehyde, CAS 50-00-0 0.1 – 0.2 Mesitylene, CAS 108-67-8
Silver Basecoat PPG3574-601A 10 – 30% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 0 - 10% hydrotreated Heavy Pet. Naphtha, CAS 64742-48-9 0 – 10% light aromatic Pet. naphtha, CAS 64742-95-6 0 – 10% 1 methoxy 2 propanol, CAS 107-98-2 0 – 10% dimethyl glutarate, CAS 1119-40-0 0 – 10% 1,2,4-trimethyl benzene, CAS 95-63-6 0 – 10% dimethyl succinate CAS 106-65-0 0 – 10% dimethyl adipate CAS 627-93-0 0 – 10% benzyl alcohol CAS 100-51-6 0 – 10% aluminium powder CAS 7429-90-5 <1% Naphthalene, CAS 91-20-3 <1% Xylene, CAS 1330-20-7	Silver basecoat PPG4613-608A 20 – 25% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 5 - 10% 2-methoxy-1-methylethyl acetate, CAS 108-65-6 1.5 – 3% 1,2,4-trimethyl benzene, CAS 95-63-6 1 – 3% butyl glycollate CAS 7397-62-8 1 – 3% 4-hydroxy-4-methylpentan-2-one CAS 123-42-2 0.1 – 0.3% dibutyltin dilaurate CAS 77-58-7 0.2 – 0.3% Naphthalene, CAS 91-20-3

Clear Basecoat PPG9430-801A 10 – 30% Heavy Aromatic Pet. Naphtha, CAS 64742-94-5 10 – 30% 2-butoxyethyl acetate, CAS 112-07-2 1 – 10% 1 methoxy 2 propanol, CAS 107-98-2 1 – 10% 1,2,4-trimethyl benzene, CAS 95-63-6 <1% Light aromatic Pet. naphtha, CAS 64742-95-6 <1% Naphthalene, CAS 91-20-3 <1% dibutyltin dilaurate CAS 77-58-7	

c) Estimate emission rate of any additional contaminants.

The components of the other internal lacquer that have not already been assessed are

Table 5-5 PPG8460-302A+ PPG8460-303A Additional Internal Lacquer Volatile Discharges

Contaminant	Emission Estimate
50 – 100% N-methyl-2-pyrrolidone, CAS 872-50-4	The percentage of PGMEA in the epoxy internal lacquer is quoted as being 30-60%. This compound's emission rate was 176.4 g/hr. As the proportion of methyl pyrrolidone is higher than PGMEA by a factor of 1.6 the estimated emission rate would be 294 g/hr.
7 – 10% propylene carbonate, CAS 108-32-7	Using a different ratio, the emissions of propylene carbonate have also been estimated from PGMEA to be 101 g/hr.

Table 5-6 Additional Main Stack Basecoat and Varnish Volatile Discharges

Contaminant	Emission Estimate
Matt over varnish PPG3603-803A and Clear basecoat PPG3602-801A 0.1 – 0.2 Mesitylene, CAS 108-67-8	The percentage of formaldehyde in the gloss overvarnish is similar to mesitylene therefore the discharge rate of mesitylene is estimated to be the same as formaldehyde i.e. 1.3 g/hr.
Clear basecoat PPG3602-801A 10 - 12.5% 2-methoxy-1-methylethyl acetate, CAS 108-65-6	The percentage of this compound is similar to that of isobutyl alcohol which had an emission rate of 29 g/hr. Although other chemicals were listed as having a content of 0-10% isobutyl alcohol had the higher emissions rate.
Silver Basecoat PPG3574-601A 0 – 10% light aromatic Pet. naphtha, CAS 64742-95-6 0 - 10% hydrotreated Heavy Pet. Naphtha, CAS 64742-48-9 Clear Basecoat PPG9430-801A <1% Light aromatic Pet. naphtha, CAS 64742-95-6	The naphtha content of other coatings is similar to the ones assessed so no additional assessment is required.
Silver basecoat PPG4613-608A 5 - 10% 2-methoxy-1-methylethyl acetate, CAS 108-65-6	The percentage of this compound is similar to that of 1 methoxy 2 propanol which had an emission rate of 39 g/hr.

Contaminant	Emission Estimate
Silver Basecoat PPG3574-601A 0 – 10% dimethyl succinate CAS 106-65-0 0 – 10% dimethyl adipate CAS 627-93-0 0 – 10% benzyl alcohol CAS 100-51-6 0 – 10% aluminium powder CAS 7429-90-5 Clear Basecoat PPG9430-801A 0 – 10% 1 methoxy 2 propanol, CAS 107-98-2	The percentage of these compounds is similar to that of dimethyl glutarate which had an emission rate of 18 g/hr. Aluminium powder is held in the resin so isn't actually discharged. The emission rate of 1 methoxy 2 propanol is estimated to be 39 g/hr based on the dimethyl glutarate.
Silver basecoat PPG4613-608A 1 – 3% butyl glycollate CAS 7397-62-8 1 – 3% 4-hydroxy-4-methylpentan-2-one CAS 123-42-2	The percentage of these compounds is similar to that of naphthalene which had an emission rate of 14 g/hr.
Silver basecoat PPG4613-608A and Clear Basecoat PPG9430-801A 0.1 – 0.3% dibutyltin dilaurate CAS 77-58-7	The percentage of this compound is similar to that of formaldehyde which had an emission rate of 8.3 g/hr.
Clear Basecoat PPG9430-801A 10 – 30% 2-butoxyethyl acetate, CAS 112-07-2	The percentage of this compound is similar to that of three times butanone oxime which equates to an emission rate of 23.4 g/hr.

d) *Assess the potential health impact of any additional contaminants that are discharged at a rate of greater than 50 g/hr.*

Of the different coating emissions assessed in Tables 5-5 and 5-6, only those from the alternative internal lacquer were estimated to be above 50 g/hr:

N-methyl-2-pyrrolidone 294 g/hr

propylene carbonate 101 g/hr

The only chemical that is just discharged from the internal lacquer stack is PGMEA. A discharge rate of 176.4 g/hr produced a 99.9%ile off-site concentration of 43 µg/m^3 as a 1 hour average and maximum of 2.3 µg/m^3 as a annual average. For a single stack the predicted ambient concentrations determined by air dispersion modelling is proportional to the contaminant's discharge rate. The estimated ambient concentrations in Table 5-7 have been determined from the PGMEA model results.

Table 5-7 Assessment of Additional Internal Lacquer Volatile Discharges

VOC	Max off-site concentration, µg/m^3	Assessment % of guideline	Air Quality Criteria, µg/m^3	Averaging Period
N-methyl-2-pyrrolidone	71.6	17%	420	1 hr
	3.8	9%	42	Annual
Propylene carbonate	24.6	5%	500	1 hr
	1.3	2.6%	50	Annual

6 Combustion Emissions

Q5. ***Emissions from Natural Gas heaters.***

a) *Provide a brief qualitative assessment to support the conclusion in section 5.4. "The combustion emissions are low and therefore not expected to cause any off-site effects".*

The maximum predicted 1-hour and 24-hour average off-site concentrations of NO_2 and 1-hour and 8-hour average concentrations of CO from the NCI site were assessed in the previous application using the same emission information but a different dispersion model, Ausplume. As there haven't been any changes to the number or operation of the gas fired heaters the previous assessment is considered to still be valid.

A summary of the model predictions is presented in Table 6-2, together with the relevant guideline values. The 1-hour and 24-hour results for NO_2 are presented graphically in Figures 6-1 and 6-2 respectively and the 1-hour and 8 hour results for CO are presented in Figures 6-3 and 6-4 respectively.

Table 6-1 Maximum Predicted Off-Site Combustion Gas Concentration

Contaminant	Maximum Predicted Off-Site Concentration (µg/m^3)			Air Quality Criteria (µg/m^3)
	Site Contribution	Background Concentration	Total	
NO_2 1-hr Average	40	13	53	200
NO_2 24-hr Average	20	13	33	100
CO 1-hr Average	1,400	320	1,720	30,000
CO 8-hr Average	750	360	1,110	10,000

Table 6-2 shows that the maximum relevant 1 hour, 8 hour or 24 hour average concentrations for both contaminants are well below the air quality criteria.

Figure 6-1 NO_2 99.9 percentile 1 hour average Concentrations (µg/m^3)

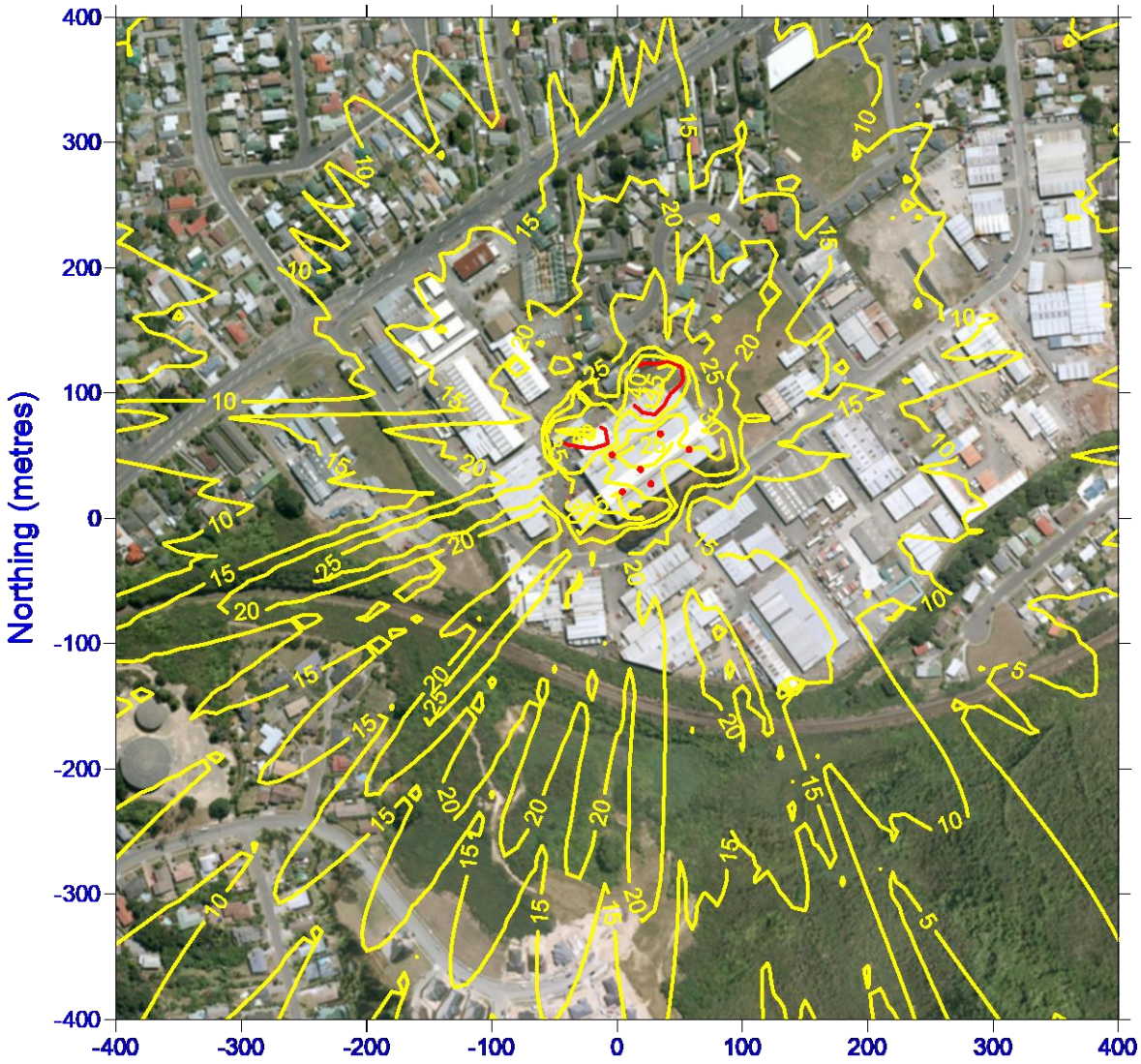


Figure 6-2 Maximum NO_2 24 hour average Concentrations (µg/m^3)

Figure 6-3 Maximum CO 99.9 percentile 1 hour average Concentrations (µg/m^3)

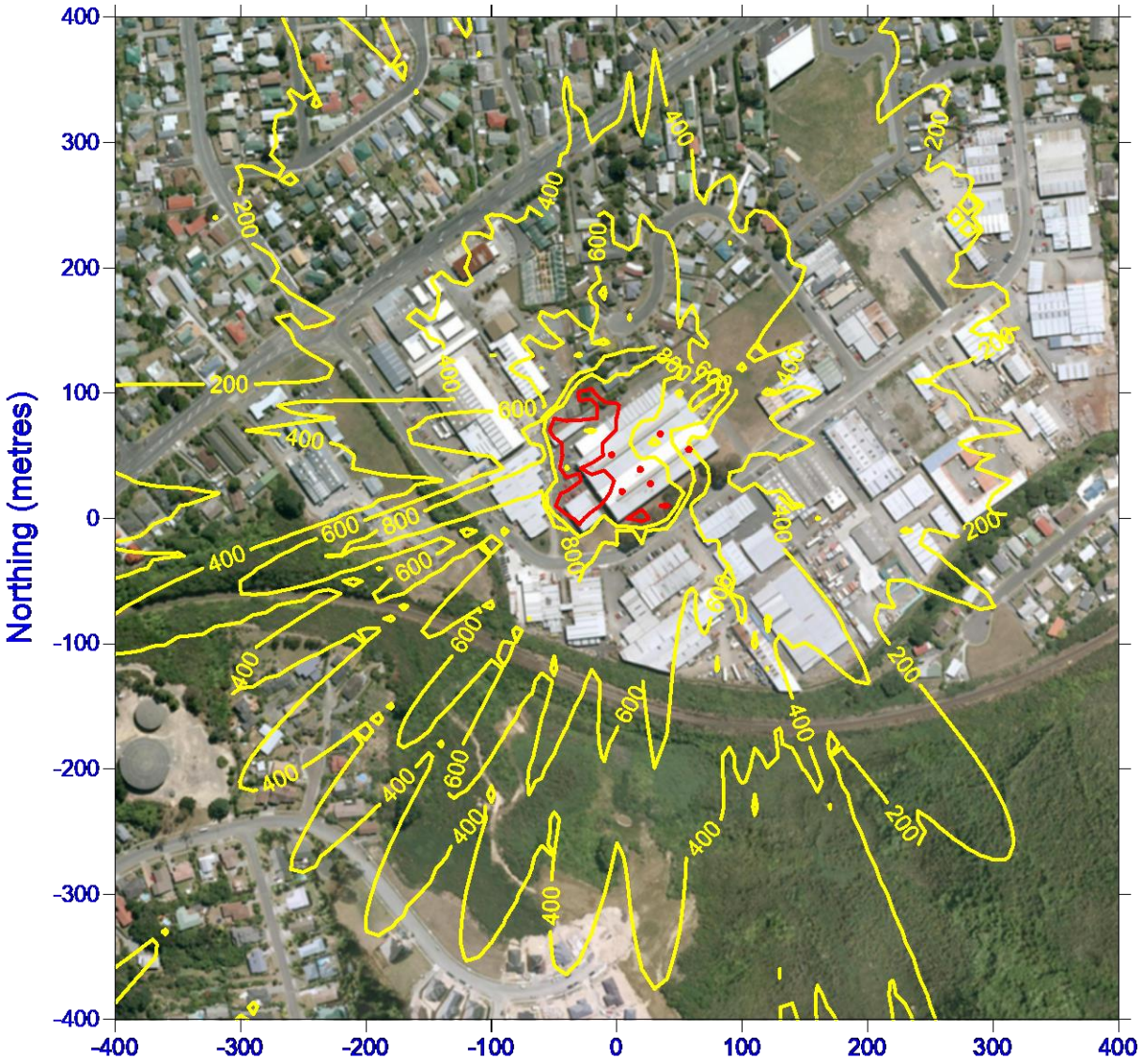
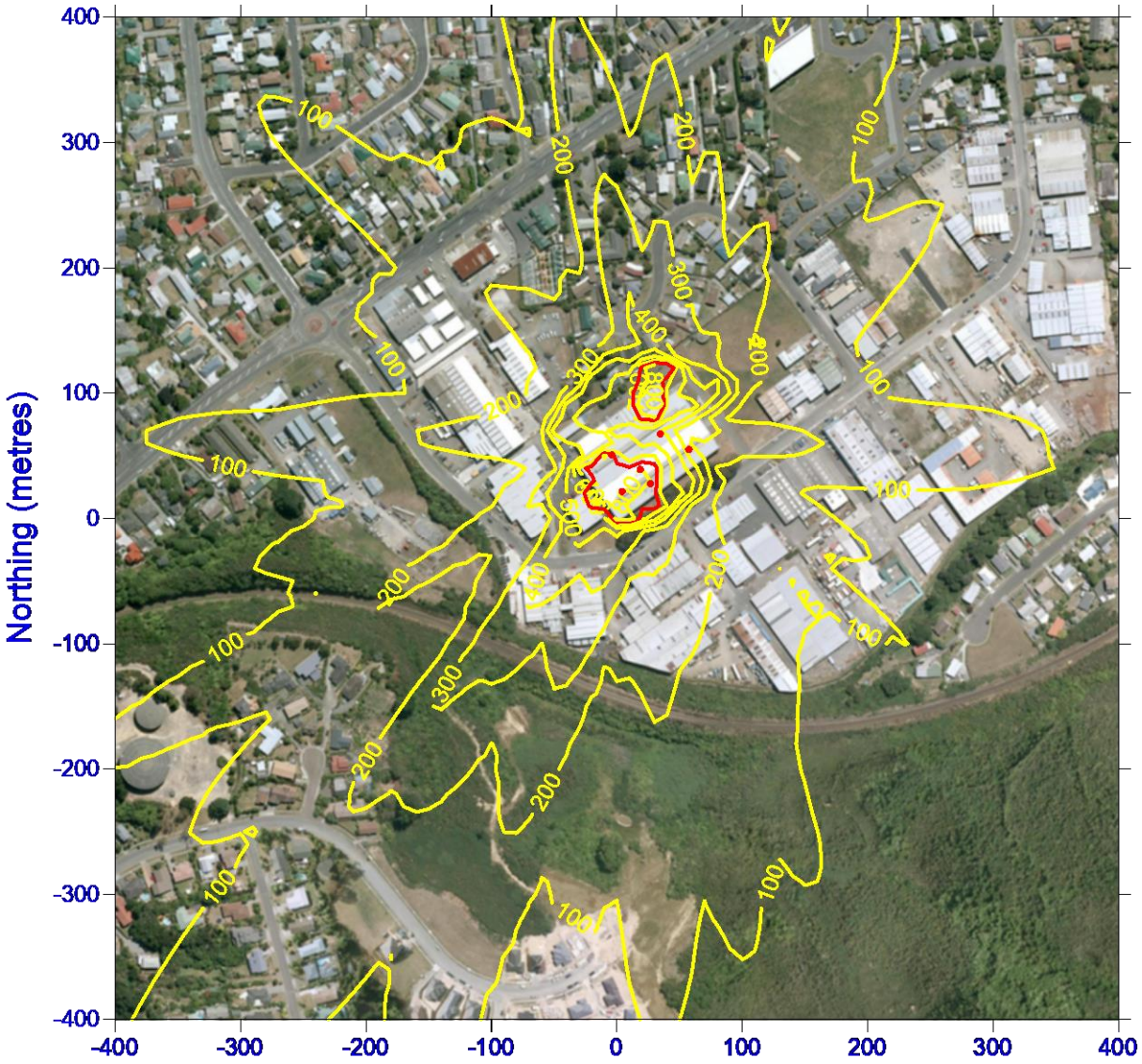


Figure 6-4 Maximum CO 8 hour average Concentrations (µg/m³)



7 Odour Assessment

Q6. ***Odour assessment - Normal operating conditions***

a) *Olfactometry and dispersion modelling have been used to assess the impact of odour under normal operating conditions in the AEE. As discussed in pre-app consultation, explain why this tool was chosen over tools that MfE list as higher priority in the Odour Good Practice Guide.*

Table A2.1 in the Appendix of the Good Practice Guide on Odour lists preferred assessment techniques for odour discharges from an existing facility. Table 7.1 discusses how NCI has used these options in the AEE.

Table 7-1 Good Practice Guide Odour Assessment Tools

Assessment effects	Chronic	Acute	Odour Guideline Comments	NCI Comment
Community consultation	High	High	Periodic meetings with community representatives from Community associations. Look for anecdotal evidence of community feeling about odour effects.	We have undertaken letter drops to gauge Mountbatten Grove resident's interest in NCI's operations in the past and only received three responses. When letters were sent to the residents as part of consultation required by the consent it just seemed to remind residents to complain.
Complaint records	High	High	Complaints that have been validated by an enforcement officer should be clearly identified. Complaints may also be substantiated (verified) based on wind direction or process records, or as simply registered but not confirmed.	There have been very few complaints that have been verified. Complaints are discussed in Section 10.2 of the AEE and in this further information response..
Industry/council experience	High	High	Experiences of the industry or regional council with other similar discharges.	I don't think this applies to NCI.
Odour annoyance survey	High	–	Urban and semi-urban areas. Assess against percent annoyed criterion.	These are very expensive and there are other odour sources in the area, which means there may not be a clear determination odour sources in the area.
	–	Low	If the acute effects are infrequent, surveys may not reflect the impact of the effect on the surrounding environment.	
Meteorology and terrain assessment	Mod. to high	Low	Use to assess the potential for downwind adverse effects as a result of poor dispersion around terrain features or in particular meteorological conditions.	Dispersion modelling was done which covers all meteorological conditions.
Review emission control system(s)	Mod.	Low	Look for compliance with best practicable option (BPO) or industry codes of practice.	This was covered in section 11.3 of the AEE.

Assessment effects	Chronic	Acute	Odour Guideline Comments	NCI Comment
Odour diaries and weather monitoring	Mod.	–	Isolated areas with low population densities. Assess the frequency, duration, and strength of odour impact events and associated experiences over six months, or a longer time period if necessary, to encompass a specific season.	NCI is in a built up area but does have an on-site meteorological mast. NCI has suggested in the past to neighbours that they record odour instances but they were happier with reporting odour when it occurred.
	–	Low	If the acute effects are infrequent, diaries may not reflect the impact of the effect on the surrounding environment.	
Review of odour management plan and contingency procedures, risk assessment	N/A	High	What is the level of acceptable risk for uncontrolled odour discharges? Consider high-probability/low-impact events, and low probability/high-impact events. Is BPO being used?	NCI has a very consistent process with a constant production rate throughout the day which means the discharges are consistent.
Olfactometry and modelling of odour sources	Low	–	**Generally not recommended** unless assessing potential effect of proposed plant changes, confirming actual emission rate changes following new procedures and/or new plant commissioning etc, or distinguishing the activity in question from other similar activities in the region.	To assess individual chemicals, dispersion modelling was undertaken so odour modelling was an extension to this programme. As discussed above, the affects of a range of meteorological conditions can be assessed with modelling and the relative level of odour emission can be assessed.
	–	Low	**Not recommended** as an assessment tool for occasional or periodic releases of odour.	

a) *Assess the potential impact on odour emissions of using different types of internal lacquer, external base coat and varnish to those used during odour emission testing.*

All of the coatings use similar chemicals in their formulation such as a white spirit base with glycol ethers, alcohols and others to provide a mixture that evaporates at the correct rate to provide a consistent film on the product being coated. Therefore the type of odour from each coating is not expected to vary significantly.

8 Odour Complaints

Q7. Meteorology and Odour Complaints

a) *Expand the assessment of meteorology and odour complaints to consider the last three years of operation - 2016, 2017 and 2018.*

The wind data from the NCI anemometer has been reviewed for 2016 - 2018, as presented in Table 8-1. The minutes relate to only dates that the plant could potentially be operating i.e. not weekends or public holidays, times where the plant could be operating (7am – 11 pm) (although the plant mainly operates to 6:30 pm now), and only wind directions where NCI emissions line up with Mountbatten Grove (between 150º and 200º).

Table 8-1 Amount of Time the Wind was Blowing Towards Mountbatten Grove and NCI Could be Operating

Month	Minutes (2016)	Hours (2016)	Minutes (2017)	Hours (2017)	Minutes (2018)	Hours (2018)
January	1,827	30.5	805	13.4	1,693	28.2
February	831	13.9	900	15.0	1,485	24.8
March	1,809	30.2	2,398	40.0	2,888	48.1
April	1,349	22.5	1,557	26.0	1,006	16.8
May	888	14.8	2,017	33.6	1,006	16.8
June	1,621	27.0	1,689	28.2	2,610	43.5
July	1,321	22.0	2,157	36.0	1,822	30.4
August	2,382	39.7	2,585	43.1	2,467	41.1
September	2,993	49.9	1,279	21.3	3,701	61.7
October	1,461	24.4	1,709	28.5	1,493	24.9
November	742	12.4	2,283	38.1	2,151	35.9
December	747	12.5	1,636	27.3	1,901	31.7
Total	17,971	299.5	21,015	350.3	24,223	403.7

Over the last three years there have been between ~300 - 400 hours throughout the year that air emissions from NCI could reach Mountbatten Grove. Compliant details are typically of a short term 10 – 15 min odour whereas there is over 750 minutes every month to over 3,000 minutes for some months that emissions are in the direction of Mountbatten Grove. NCI has visited Mountbatten Grove on many occasions and not detected a strong odour ever and typically there is either no odour or it is very weak. Using the FIDOL[1] odour assessment, regardless of where the alleged odour comes from, the frequency, duration and intensity are all low and therefore the odour is not offensive.

There were 4 notifications of odour from Mountbatten Grove in 2016, 12 in 2017 and 2 in 2018. There is a lot of time that wind directions are from NCI towards Mountbatten Grove and there are no odour

[1] FIDOL = an odour assessment criteria related to the frequency, intensity, duration, offensiveness and location.

concerns highlighted. The aerosol manufacture process is continuous once started as split shifts are used to cover breaks. Therefore NCI does not consider it produces objectionable and offensive odour.

b) *Detail the meteorological conditions which were occurring around the time of any complaints made in 2016, 2017 and 2018.*

See Table 8-1.

c) *Based on wind direction and wind speed data clarify whether NCI was operating and upwind of the location/s of the complainants at the time the complaint was made.*

See Table 8-1.

d) Assess the potential for NCI to be the source of the odours which were complained about.

See Table 8-1.

Figure 8-2 Wind Directions

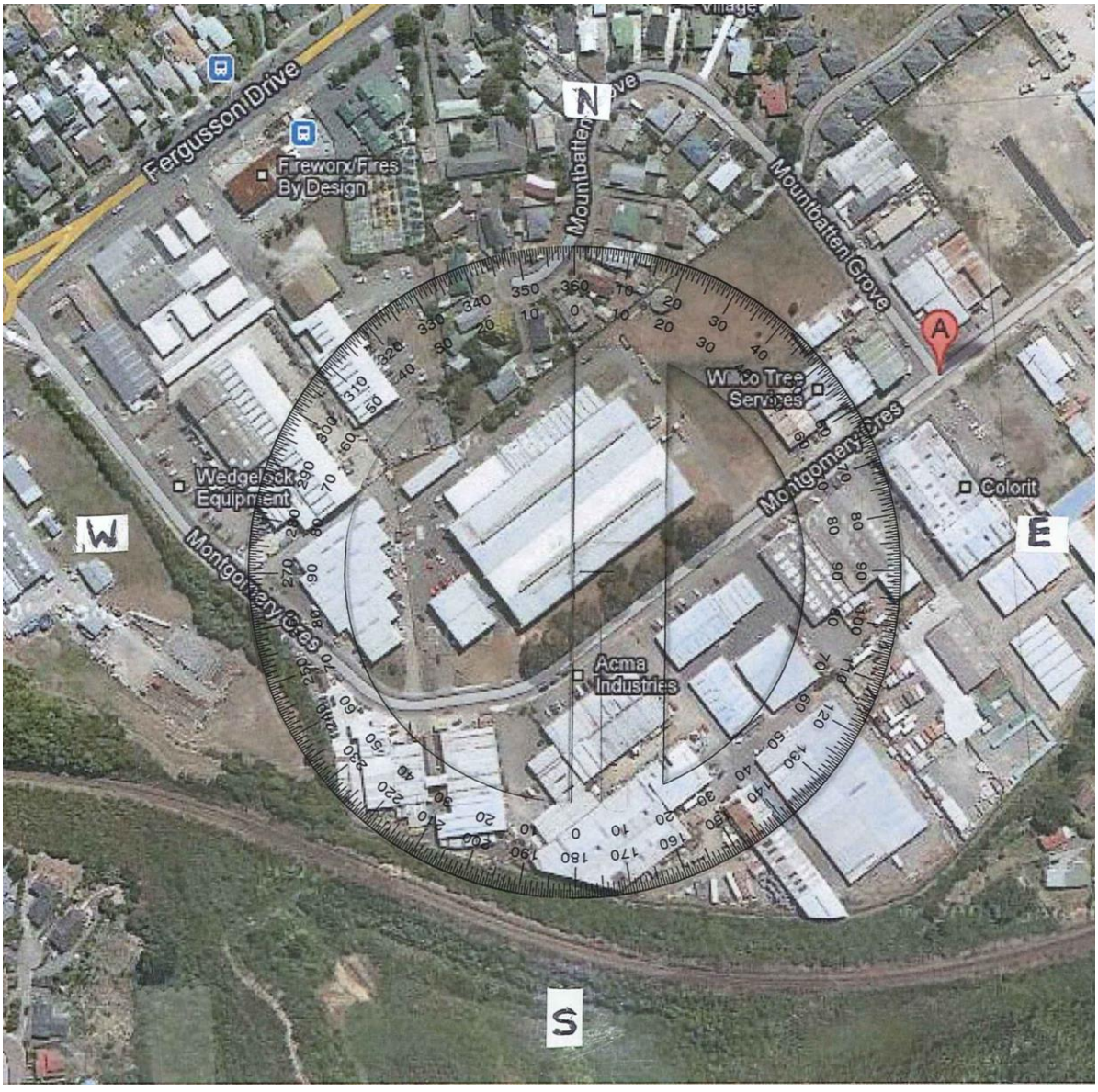


Table 8-3 Complaint Details from 2016 - 2019

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
Mountbatten Grove	27/01/2016	11:40 and 13:40	Odour was notified at 15:10, no details on relative level etc	At 11:40 the wind was reasonably strong at 4.1 m/s and more towards the Council Yard. At 13:40 the wind was more in line with Mountbatten grove and a lower speed of 2.6 m/s.	Unsure whether it was NCI or not, there were no details on intensity level or frequency and the notification of the complaint was late, 15:10.	Site staff couldn't be contacted, the Site manager was on holiday. No visits to the location made.	Advised Simon Hunt on 27 and 28 of the weather information and production records.
43 Mountbatten Grove	28/01/2016	20:30	There was a paint smell at Nicole's place	At that time the wind direction was about 166º which lined up with NCI to the complainant's house however it did not stay in that direction for very long.		Stewart Burns investigated the odour and could detect some very weak intermittent paint smell. Assessing the FIDOL factors this is not considered to be objectionable or offensive.	Was waiting for Rajas response to some questions which didn't come and then I forgot to follow-up.
Mountbatten Grove	5/04/2016	13:30-15:30	Council was called at 3:30pm and visited Mountbatten at 4:30 but couldn't detect any odour.	For the majority of the complaint time period the wind direction did not line up with NCI. The wind direction alternated as follows: 13:30 83º, 13:50 114º, 14:07 80º, 14:24 106º, 14:23 80º, 14:43 138º, 15:12 85º, 15:46 165º, 16:15 104º, 16:30 126º. Wind speed around 2.5 - 2.7 m/s.	Odour not verified	None	Louise Emailed NCI on 7/4/16.
Nicola Ratahi, 43 Mountbatten Grove	26/04/2016	13:10	Nicola noticed some odour when she was at home for lunch.	Wind was north to northeast from about 12:00 - 12:30. Following this period the wind moved towards the south and oscillated between 150º and 210º from about 12:40 - 13:30. During this period there would have been short periods where the wind direction would have lined up with NCI at around 12:50, 13:01 & 13:11.	No odour was determined during a ten minute site visit.	None	Emailed Notifications, 26/04/16
Nicola Ratahi, 43 Mountbatten Grove	8/02/2017	20:23	Nicola noticed some odour near her garage.	At 19:55 the wind was SE then at 20:15 it changed to south but at 1.2 m/s compared to 2.5 m/s before. It swung back to SE from about 20:20 to 20:50 at about 2.5 - 3.0 m/s.	When NCI staff visited Nicola's place there was only 3/40 of the observation where odour was detected and those were of a very weak paint odour.	Very intermittent and very weak odour is not considered to be offensive or objectionable.	Emailed Notifications, 9/02/17

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
Greater Wellington Regional Council on behalf of resident in culdesac of Mountbatten Grove	20/02/2017	11:54	Typical NCI odour, It has been some time since they have experienced odour so bad, It was so strong they had to close all their windows (too late) – beautiful warm summery day, very light winds	Wind direction 121º lined up more with Colorit rather than NCI. Wind speed quite low, around 1.3 m/s.	Short term and infrequent so not considered offensive and objectionable.	GWRC stated "The odour had dissipated, so I did not attend".	Emailed Hugh Dixon Paver on 21/2/2017 to advise of weather conditions for the time of the complaint.
Nicola Ratahi, 43 Mountbatten Grove, Also Anne Devlin	8/03/2017	13:45	Nicola noticed some odour inside her house due to partially open windows in the bathroom and outside the house when she was leaving to go back to work.	At the wind was around SSE from about 1:15 to 2:10pm at around 2.5 m/s.	When NCI staff visited Nicola's place at 2:00pm there was no odour detected.	There was no odour present at the time of the visit so no action to be taken.	Emailed Simon, 9/03/17
Nicola Ratahi, 43 Mountbatten Grove, Also Anne Devlin	31/07/2017	14:20	Nicola noticed intermittent weak odour.	The wind direction was around 195º for at least two hours before the report. This lines up more with the neighbouring fabrication businesses to the west.	When NCI staff visited Nicola's place at 2:30pm there was only 2/60 odour samples indicating a very weak odour and therefore it is not considered to be objectionable or offensive.	None taken	Emailed Notifications, 31/07/17
35 Mountbatten Grove	3/08/2017	16:55	Intermittent odour	The wind direction would need to be about 180º to line up with the NCI. For the preceding 1.5 hours the wind direction was predominantly > 180º.	No odour was determined during a ten minute site visit.	None taken	Emailed Simon, 4/08/17

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
Mountbatten Grove	13/11/2017	10:34	Odour in Mountbatten Grove reported by GWRC	South at about 2.2 m/s.	NCI Staff visited Mountbatten Grove at 10:42 and couldn't detect any odour.	We have reviewed the wind direction information but without knowing which part of Mountbatten Grove the odour report was from and the short duration of the odour we are not sure what the cause may be. We do not consider NCI to be the source.	emailed Simon 13/11/17
Mountbatten Grove	14/11/2017	10:40 and 13:40	Odour in Mountbatten Grove reported by GWRC	Easterly in the morning and Southwest in the afternoon	NCI Staff visited Mountbatten Grove at 10:50 and 13:50 couldn't detect any odour.	The wind direction didn't support odour coming from NCI to Mountbatten Grove. We do no not consider NCI to be the source.	emailed Simon 14/11/17
Mountbatten Grove	14/11/2017	08:11, 10:45, 14:05	Odour in Mountbatten Grove reported by GWRC and they noticed some odour at 10:58 while on site.	Easterly in the morning and Southwest in the afternoon	NCI Staff visited Mountbatten Grove at 10:50 and 13:50 couldn't detect any odour.	The wind direction didn't support odour coming from NCI to Mountbatten Grove. We do not consider NCI to be the source.	emailed Shane
Mountbatten Grove	21/11/2017	11:10	Odour in Mountbatten Grove reported by GWRC and they visited NCI and considered the odour to be the same. First call at 12.50pm, she has done a site tour. 2nd call at 2.07pm stating that she had detected an O&O and it was only the lack of duration that has not caused more issues. Original call to council was at 11.10am.	Swinging between SE and S since about 9:00 at around 2.8 - 4 m/s	NCI Staff weren't notified till about 2:20 by which time it was too late to assess the odour. If GWRC had contacted NCI when they were there a parallel investigation could have been undertaken. GWRC did not investigate other businesses either.	The wind direction was fluctuating quite a lot and NCI's process is consistent so there if it really was NCI the odour should be a lot more consistent. NCI has not investigated due to delay in being informed.	emailed Shane

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
Mountbatten Grove	7/12/2017	1:15	Odour in Mountbatten Grove reported by GWRC around 1:30.	SW at 1:15 at around 2.5 m/s	NCI Staff (Shane and Stewart) visited both Mountbatten Grove and Fergusson drive via Montgomery crescent. There seemed to be solvent odour from Wedgelock spray painting when passing their operation and the same odour was noticed in Mountbatten Grove.	The wind direction was more in line with Wedgelock's operation, NCI's line was not operating at the time due to a breakdown.	Emailed Simon 7/12/17.
Mountbatten Grove, not 40 Mountbatten Grove as Ann Devlin commented she hadn't smelt anything today.	18/12/2017	10:59	Odour in Mountbatten Grove reported by GWRC at 10:59 and they visited Mountbatten Grove at 12:35 and noticed a short duration odour. NCI did not detect any odour at 11:10 but did detect an odour at the Fergusson/Montgomery roundabout. GWRC also detected an odour there as well but considered it to be different to what was smelled at Mountbatten Grove.	At 10:30 when Shane drove past Wedgelock and detected their odour the wind was at 208º at around 1.9 m/s At 10:59 the wind direction was 191º at 3.4 m/s At 11:10 the wind direction was 192º at 4 m/s At 12:35 the wind direction was 201º at 3.1 m/s	NCI Staff didn't detect an odour when at Mountbatten grove but did smell an odour at the Fergusson Road roundabout. GWRC did not investigate Wedgelock, they are going to visit them on Thursday.	The wind direction was more in line with Wedgelock for Mountbatten Grove and Resene for Fergusson Drive Roundabout. NCI does not consider the odour to be as a result of its operations.	Emailed Simon 18/12/17.
31 & 40 Mountbatten Grove	20/12/2017	12:57	Odour in Mountbatten Grove reported by GWRC at 12:57	The wind was at 208º at around 6.0 m/s	NCI Staff Went to Mountbatten Grove at 1:05 and detected 1 out of 60 measurements to be weak odour the rest none.	The wind direction was more in line with Wedgelock for Mountbatten Grove. NCI does not consider the odour to be as a result of its operations.	Emailed Simon 20/12/17.

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
40 Mountbatten Grove, Ann Devlin	9/02/2018	Strong odour at 4:44 PM for about 15 mins	Odour in Mountbatten Grove reported by GWRC at 17:43	The wind was at 167º at around 1.4 m/s and moving to the west at 5 pm.	NCI Staff were only notified an hour later so were not able to check the smell, however as it only lasted for 15 minutes they would have been unlikely to get there in time anyway. The aluminium aerosol line was in the process of shutting down at 4:45 so the processes would progressively be turning off. There were several other occasions during the day where the wind had lined up with NCI but there was not complaint. Short term strong odour is likely to be other sources such as Wedgelock or Resene.	The wind direction was moving to the west so would not line up with NCI for very long, Wedgelock and Resene line up more with the West. NCI does not consider the odour to be as a result of its operations.	Emailed Simon 12/2/18.
Mountbatten Grove, Trevor	1/11/2018	Odour reported at 10:42 PM	Odour in Mountbatten Grove reported by GWRC at 10:59	The wind was at 246º at around 2.6 m/s and moving to the southeast around 11 am.	NCI Staff visited the site and stayed there for about 30 mins and did not detect any odour. As the initial wind angle lines up more with Resene it was more likely to be them.	None, no odour detected	Emailed Simon 1/11/18.
Mountbatten Grove, Regional Council	14/01/2019	15:00	Odour in Mountbatten Grove reported by GWRC at 15:45 noticed from 15:00, notified NCI at 15:45 PM, strong enough to require closing up of the house.	The wind was between about 180º and 200º between 15:00 and 16:10 and between 2.3 m/s and 3.3 m/s average speed during the same period.	NCI Staff visited the site at 16:25 and did not detect any odour. The wind angle lines up more with NCI however it would match more with the mid to top section of Mountbatten Grove. NCI was producing fuel Cans which have a smaller amount of coating on the internal and there was nothing unusual with the process.	None, no odour detected	Emailed Simon 15/1/19.

Name and Address	Date of Odour	Time of Odour	Details of the incident	Weather conditions	Most likely cause of the incident	Mitigation/Corrective actions	FORMAL NOTIFICATION
31 Mountbatten Grove, Trevor	16/01/2019	9:01:00 AM and ~15:00	Odour in Mountbatten Grove reported to NCI, at 9:01 AM, Council visited in the afternoon who stated the odour was weak (1-2).	Around 9 - 9:15 the wind direction was basically southerly which is reasonably aligned with 31 Montgomery. The wind direction from 9:30 - 10:00 would have matched better. The wind speed over this period was around 2.6 - 2.8 m/s over that period. In the afternoon the wind direction lined up with the end of Mountbatten Grove for a short time and kept swinging around to the East so shouldn't have been noticeable at Trevor's place. The wind sped was around 2.8 - 3.6 m/s.	NCI Staff visited the site at 9:15 and did not detect any odour. NCI was producing fuel Cans which have a smaller amount of coating on the internal and there was nothing unusual with the process.	None, no odour detected	
40 Mountbatten Grove, Ann Devlin	29/01/2019	13:20 PM	Odour in Mountbatten Grove reported to NCI by GWRC, at 15:26.	The wind is moving from pole to pole basically. At 12:36 it was coming from the north, from 1:50 - 2:20 it was around east. At around 2:45 - 3:10 the wind direction would line up with lower Mountbatten grove, just east of south. Following this period the wind has gone towards west. The wind speed was around 2.2 - 2.8 m/s	NCI Staff visited the site at 15:45 ?and did not detect any odour. NCI was producing Cans and there was nothing unusual with the process.	None, no odour detected	Emailed Simon, 30/1/19
43 Mountbatten Grove, Nicola	15/03/2019	11:06	Odour at 43 Mountbatten Grove	The wind direction was northerly to westerly for most of the morning. There was a brief period at 10:38 the wind direction was 144º or SSE. Wind speed was 0.4 - 1.0 m/s from 9:30 - 11:15 and following that peaked at 2.5 m/s.	Staff visited the site and did not detect any odour.	None, no odour detected	Emailed Simon, 15/3/19
40 Mountbatten Grove, Ann Devlin	3/04/2019	14:20	Intermittent odour reported to NCI by GWRC at 14:20	The wind was wavering around the direction of NCI more so earlier in the day but was more variable during the reporting time. At 14:00 the wind direction was 198º @ 2.1 m/s. At 14:20 the wind direction was 154º @ 1.1 m/s. 40 Mountbatten Grove lines up with NCI at an angle of about 160º so the wind wouldn't have matched with NCI for much of that period. NCI was running through normal shifts that day.	Staff visited the site at 14:30 and did not detect any odour.	None, no odour detected	Emailed Simon, 4/4/19

9 Accidental Odour Discharges

Q8. ***Odour assessment upset conditions - accidental odour discharges***

a) *Identify any potential process disruptions or equipment failures which could to accidental odour discharges of contaminants to air.*

NCI's process is very constant, once the new Can is set-up to have the correct quality and specification of coatings the process is automatic. Staff undertake quality control checks on a regular basis which also means the process is monitored for consistency. Unlike some other odour producing activities such as abattoirs or effluent treatment, the quality of raw materials can vary significantly and changes in bacterial activity can produce a large variation in emissions. NCI uses commercially made coatings that have a consistent composition so the coating processes do not suffer the same issues.

b) *Describe the number and type of accidental odour discharges that have occurred from the plant over the last two years.*

NCI does not have accidental odour discharges.

c) *Detail the maintenance and monitoring which is undertaken to minimise the risk of process disruptions or equipment failures which could to accidental discharges of odour to air.*

As discussed above.

d) *Provide a qualitative assessment of the frequency and potential significance of accidental odour discharges.*

NCI does not have accidental odour discharges.

10 AMOP

Q9. Adaptive Management Odour Plan.

a) *Provide a summary of the development, content and use of the site's adaptive management odour plan (AMOP) over the duration of the previous consent.*

Condition 4 of the current consent required the presentation of odour reduction options to assist with the development of the AMOP. These options were discussed in Section 11.3 of the AEE. Condition 5 required the preparation of the AMOP and it has been revised several times since its development. Following a review of the options the main odour reduction method available to NCI is stopping the process but this would not be an immediate control as it would take around 20 minutes for cans to pass through the process.

Although there have been several complaints over the years there has never been a situation of sustained odour, or odour that has been confirmed to be from NCI, that would require the implementation of the Plan.

b) *Outline NCI's proposed on-going review and use of the site's AMOP.*

Although NCI has requested that the AMOP is not included in the new consent as presented in the draft conditions, it does provide a portal for documenting NCIs odour management plan if off-site odour is detected which is alleged to be from NCI. The current plan covers complaint investigation processes, the form used to record investigations and staff responsibilities on site. As the plan is established, review is only required if there is a change in circumstances such as frequent verified odour complaints or changes in staff responsibilities.

11 Air Dispersion Modelling Inputs

Q10. Timing and duration of modelled discharges

a) *Clarify if the air contaminant discharges from the plant have been modelled as a:*

i. Constant emission source (24/7); or

ii. *Variable emission source (discharging during the plant's operational hours 7 am to 11 pm).*

The discharges were modelled as a variable emission for the hours of 7.00 am to 11.00 pm daily as this is when the plant operates.

b) *If the discharges have been modelled as a variable source, comment on the validity of using the*

i. 99.9% value as a maximum predicted contaminant concentration.

ii. 99.5 % value as a maximum predicted odour concentration.

Jacob's provided the following comment

"The Ministry for the Environment's Good Practice Guide for Atmospheric Dispersion Modelling, 2004 sets out how the 99.9%ile and 99.5%ile should be applied. In accordance with the guidance provided in the guide, the modelling was conducted for two years of hour meteorological data, with each year having approximately 8,760 hours at each receptor point modelled and then the 99.9 and 99.5%ile applied to the modelled dataset. It just happens that for a number of hours in the met dataset modelled there is no discharge from the site, which results in a zero result at for those hours at the receptor point. We believe the use of the 99.9 and the 99.5%ile is as such in accordance with the guide and therefore a valid approach."

12 Air Dispersion Modelling Outputs

Q11. CALPUFF text output files and predicted GLCs

a) Provide example CALPUFF output text files for contaminant and odour discharges.

Jacobs has provided the following comment and the files are attached to the email.

"Please find attached the output files and a spreadsheet used to take the modelled results and produce the Surfer plots. Please note that the modelling was done in this way:

1. CALPUFF was run for each source independently, with all contaminants modelled at a nominal 1 g/s.

2. CALSUM was used to add the two sources' concentration files, with multipliers for each contaminant and source according to the emission rates.

3. CALPOST was then used to determine the maximum ground level concentrations (MGLCs) for individual VOCs.

4. Many of the VOCs were only emitted from one source. These were calculated in post-processing based on the nominal 1 g/s emission rate for the source.

5. For 99.5th percentile odour, the CALRANK function was used since CALPUFF doesn't allow for percentiles that low."

b) Provide any spreadsheets and/or calculations used to post-process the CALPUFF contaminant modelling results into the highest predicted maximum ground level concentrations presented in Table 4 of the report.

The files are attached to the email.

13 Emissions Monitoring

Q12. Appendices

a) *Provide electronic copies of Appendix A Raw Sampling Data, Appendix B Raw Velocity Data, and Appendix C Raw Analytical Report and Appendix D Quality Control Data.*

These will be emailed with this letter.