



Each aspect of the assessment is important and no single part of it can be altered without considering the effect on the modelling guideline value (which is discussed in more detail in Section 5.3).

The calibration of the modelling guideline for the Rickerby approach involved the collation of community feedback from interviews with neighbours and historical complaints as well as surveying the levels of odour annoyance from neighbouring residents to an existing chicken farm. The Rickerby approach has also been used to assess the Kenalla broiler farm (Kingett Mitchell 2005), Wilmers Road broiler farm (Aurora Environmental 2002) broiler farm, Hubbard Poultry (Kingett Mitchell 2006), the Tegel breeder farm at Rolleston (Golder 2009) and the Groom Broiler farm (Golder 2010).

The transferability of the Rickerby approach relies on consistency in on-site management practices and surrounding amenity expectations. The Rickerby farm management practices were based on the Tegel code of practice for the management of chicken sheds that supply chickens to Tegel. The Bagries' broiler operation has these same management practices. Furthermore, the Rickerby and Bagrie broiler farms are both within a rural zone and located on the Canterbury Plains. Therefore, it is likely to have similar amenity expectations in the surrounding receiving environment. Therefore, it is considered appropriate to apply the Rickerby approach for this assessment.

The Rickerby approach does not account for temperature induced buoyancy effects of the odour plume from each shed, or allow for momentum of air passing through the fans. However, these potential shortcomings in the model setup are adequately compensated for by the overall approach, which incorporates a calibrated modelling guideline that has been validated against community feedback across a number of sites in Canterbury. Further consideration of the buoyancy effect is discussed below in light of recent report published by the Australian Rural Industrial Resource and Development Corporation (RIRDC 2010). Finally, it should be noted that in collating community feedback, perceived annoyance by broiler farm odour discharges was for all related site activities, including litter removal.

### 5.2.2 Considerations arising from RIRDC report

RIRDC (2010) investigated the effect of the buoyancy of broiler shed ventilation plumes when assessing odour. The buoyancy of the ventilation plume occurs due to the air inside the shed being heated to maintain optimal conditions for broiler chickens, making it warmer than the air outside the sheds (and therefore buoyant).

A buoyant plume means it rises into the atmosphere and is then able to disperse and dilute more readily than if it were not buoyant. The buoyancy effect is strongest when there is a large difference between the in-shed temperature and ambient (outdoor) temperature. This is most likely to be the case during cold calm conditions, which are typically the worst for dispersion and dilution of a plume. Therefore, by configuring a model to account for buoyancy effects is likely to result in lower predictions of downwind odour concentrations and therefore shorter separation distances needed to avoid objectionable odour effects. One exception to this is when there is elevated land surrounding the chicken sheds, however this is not the case for the Bagrie's farm as the land surrounding it in all directions is flat.

### 5.2.3 Model configuration

AUSPLUME version 6.0 has been used for the modelling assessment. The broiler shed fans were modelled as volume emissions sources and were grouped together as shown in Figure 3 for the four original sheds, and Figure 4 for the fans on shed 4 and 5 after the other sheds are removed. The concentrations were predicted over an area 2 km by 2 km on a regular grid with cell-spacing 25 m. An hour-varying, emission rate was used, calculated using the method described in Section 3.2. An example AUSPLUME model configuration is included in APPENDIX C.

Emissions were apportioned according to the sizes of the main 48 inch fans. The fans were grouped together as shown in Figure 3 and Figure 4 for the respective configurations. The 30 inch brooding fans were not included as volume sources (one 30 inch fan is on each of sheds 1 to 3, three 30 inch fans for shed



4, and two fans for shed 5) because they only operate for the first week of each growing cycle to keep the air circulating while the chicks are very young. Instead, odour emissions (which are low when the chickens are young) were assumed to occur from the main fans. The size of the volume sources was approximated according to the AUSPLUME User Manual (VicEPA 2000), which suggests specifying the initial vertical and horizontal spread each as a quarter of the building height. The plume centreline was assumed half the building height. All the buildings were assumed to have a height of 4 m.

Meteorological data necessary to run the AUSPLUME model have been discussed in Section 4.2.

### 5.3 Odour Modelling Guideline

In this assessment, dispersion model predictions, expressed in odour units per cubic metre ( $\text{OU}/\text{m}^3$ ), are compared with an odour modelling guideline that was specifically developed for the broiler chicken industry, to determine whether objectionable or offensive effects are likely to occur.

In the Rickerby and Kenalla chicken farm applications detailed in Aurora Environmental (2001), the 99.5<sup>th</sup> percentile modelled concentration was considered appropriate to compare to the odour modelling guideline of  $5 \text{ OU}/\text{m}^3$  for a 1-hour averaging time. The dispersion model was calibrated to existing effects around the Wilmers Road chicken farm (as detailed in Aurora Environmental (2002)). The Ministry for the Environment (MfE, 2002) explains that in cases of existing activities proposing an expansion, an appropriate odour-modelling guideline for that particular site can be determined by “calibrating” the dispersion model for the existing site against any known evidence of adverse effects.

In this assessment, the AUSPLUME model was set up and used odour emission calculations calculated as for previous assessments (i.e., Rickerby, Kenalla and Wilmers Rd and as described in Section 3.2). The receiving environment and surrounding land use is very similar. It should be noted that this guideline, when used in conjunction with the Rickerby modelling approach, provides a reasonable indication of areas where odour effects are unlikely to be offensive or objectionable for sensitive receptor locations (that is, residential dwellings where model predictions of the odour exposure are less than or equal to this guideline).

In Golder’s experience of applying the Rickerby modelling approach, significant odour effects at residential dwellings may sometimes not arise until predicted odour concentrations reach 6 to  $8 \text{ OU}/\text{m}^3$  (99.5<sup>th</sup> percentile). This reflects the differing sensitivity of individuals and the variation in actual odour effects (resulting from variation in management practices) due to different broiler shed operations for the same predicted odour exposure level. In practice, this means that the  $5 \text{ OU}/\text{m}^3$  (99.5<sup>th</sup> percentile) guideline provides good protection against potential adverse odour effects in most cases. However in some cases a higher concentration in the range of 5 to  $8 \text{ OU}/\text{m}^3$  (99.5 percentile) may still be associated with odour effects that are unlikely to be offensive or objectionable. By comparison, predicted odour concentrations above this range are invariably associated with significant adverse odour effects – in other words effects that are objectionable.

## 6.0 ODOUR DISPERSION MODELLING RESULTS

### 6.1 Introduction

Odour dispersion modelling results are discussed in the following sections. They are presented for both the existing and future shed configurations.



## 6.2 Existing Broiler Operation

### 6.2.1 Modelling results

The predicted 99.5<sup>th</sup> percentile odour GLCs for the existing broiler farm operation (three smaller sheds, and one larger shed) are shown in Figure 7. The results show the predicted 5 OU/m<sup>3</sup> contour extends in all directions, but particularly towards the south-southeast of the broiler sheds (a distance of approximately 320 m). In the southwest direction, the 5 OU/m<sup>3</sup> contour extends approximately 210 m from the nearest point of the existing sheds.

### 6.2.2 Community feedback

A search of Environment Canterbury's (ECan) complaints database indicates that there are no records of odour complaint related either directly to the Bagries' broiler operation or for chicken odours in the general area<sup>4</sup>.

The closest residence to the site is Receptor R1 (as shown in Figure 5), directly across the road from the Bagrie's property. The residents were interviewed by Golder during a site visit on 15 March 2012. The interview was conducted in accordance with the sample survey questionnaire given in Appendix 2 of the MfE Good Practice Guide for Assessing and Managing Odour in New Zealand (MfE, 2003). The owners were concerned with sprays/pesticides/herbicides, etc, and drinking water, and the smell of the cows when the neighbouring farmer to the west occasionally placed cows in the closest paddock to them. They did not have any concerns about the Bagries' operation, nor could they detect odour from the operation.

The observations at Receptor R1 are consistent with modelling results for the existing broiler farm configuration. That is, the residents do not experience adverse odour effects due to the operation of the Bagries' broiler farm. The modelling corroborates this, with a predicted odour concentration below 5 OU/m<sup>3</sup>.

Other residents surrounding the farm were not interviewed, as they are further away from the broiler sheds than Receptor R1 where there are known to be no noticeable effects.

## 6.3 Modified Broiler Operation

The predicted 99.5<sup>th</sup> percentile odour GLCs for the operation of the future broiler farm (the existing large shed and a new large tunnel-flow design shed) are shown in Figure 8. The pattern of impact is very similar to that of the existing configuration. This is expected, given that the maximum number of birds remains unchanged. This shows the predicted 5 OU/m<sup>3</sup> contour extends approximately 300 m from the nearest point of the broiler sheds in a south-southeast direction (20 m less than for the existing shed configuration). In the southwest direction, the 5 OU/m<sup>3</sup> contour extends approximately 200 m from the nearest point of the existing sheds (10 m less than for the existing operation).

<sup>4</sup> Email from V McKinnon (ECan) to N Reid (Golder) on 20 March 2012 3:14 pm.



## BAGRIE BROILER FARM ODOUR ASSESSMENT

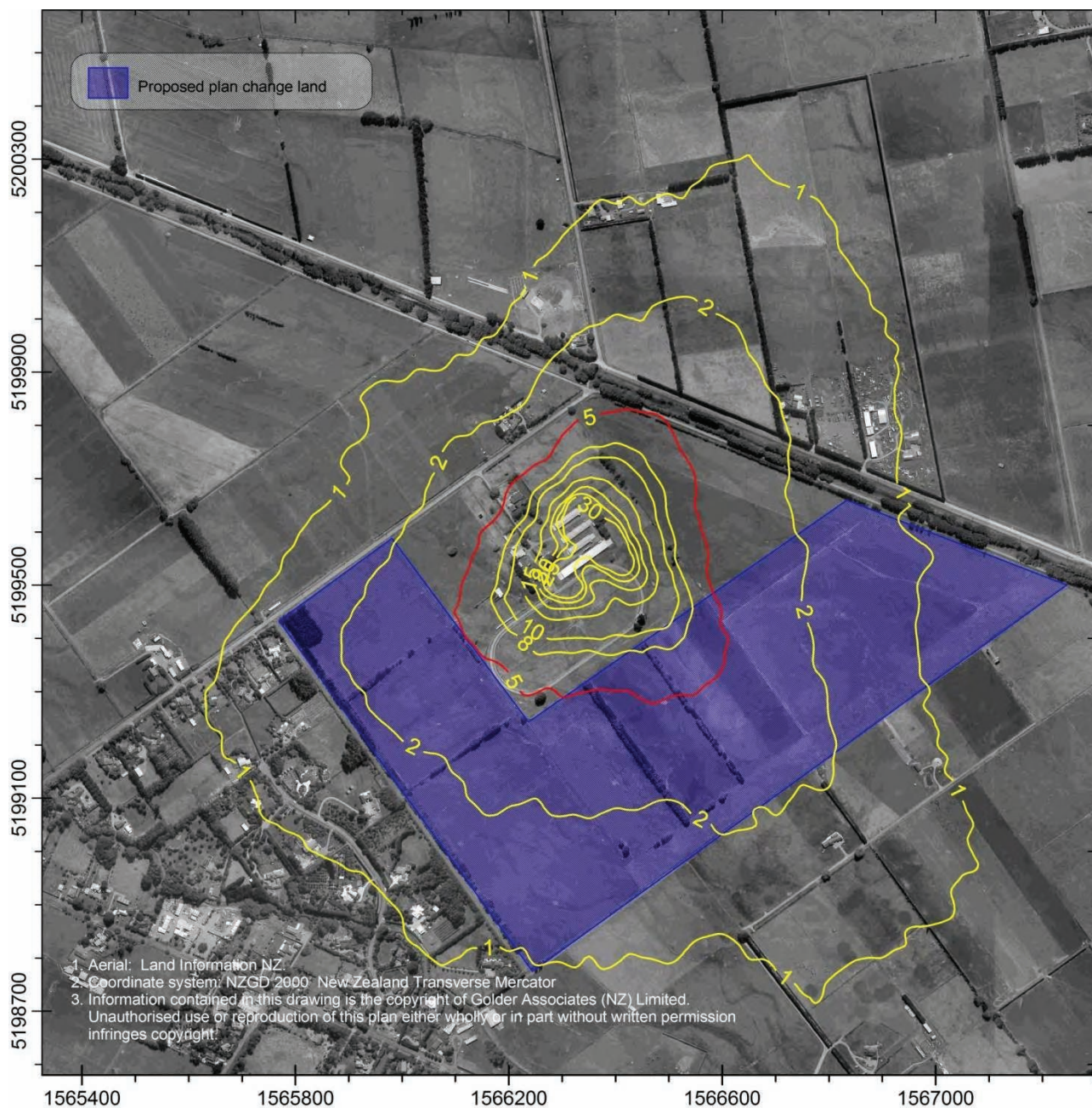


Figure 7: Existing site scenario with three small sheds and one large shed – predicted 1 hour average 99.5<sup>th</sup> percentile odour concentrations (OU/m<sup>3</sup>) (contours in yellow, with the 5 OU/m<sup>3</sup> contour shown in red).





Figure 8: Future site scenario with two sheds – predicted 1 hour average 99.5<sup>th</sup> percentile odour concentrations (OU/m<sup>3</sup>) (contours in yellow, with the 5 OU/m<sup>3</sup> contour shown in red).

## 7.0 DISCUSSION AND CONCLUSIONS

### 7.1 Effects Comparison of Existing and Future Shed Layouts

The two modelling scenarios for the existing and future shed layouts give rise to similar patterns of impact. However, the existing shed configuration results in a predicted 5 OU/m<sup>3</sup> contour that extends slightly further to the southeast and southwest than the contour for the future shed configuration (i.e., in the direction of the Bagries' plan change land). Conversely, the future shed scenario results in a predicted 5 OU/m<sup>3</sup> contour that extends slightly further to the northeast and northwest.



The shift in impact between the two scenarios is due to changes in the locations of the main discharges of odour from the sheds. In particular, the odour emissions from the existing sheds would in the future be discharged from new shed (shed 5), which is situated further north and which has the majority of its exhaust fans at its eastern end.

In summary, the future shed layout is likely to result in a slightly smaller impact on the proposed plan change land than the current shed layout.

### 7.2 Comparison to Buffer Distance Guidance

The odour dispersion modelling results presented in this report can be compared to published buffer distances for broiler farms (discussed in Section 5.1) as a check of the distance from the broiler shed to the predicted 5 OU/m<sup>3</sup> contour.

Under the Taranaki Regional Plan (Appendix V – TDC 2011), a farm with approximately 65,000 birds would require a 300 m buffer (see Table 4). This distance is consistent with the findings of the dispersion modelling assessment (i.e., distances between 250 m and 320 m, depending on wind direction).

The Victorian Broiler Code (VC 2010) method of determining a buffer distance has been applied to a farm with a bird capacity of 65,000. This results in a buffer distance of approximately 260 m from the sheds. This method results in a slightly smaller distance than that under the Taranaki Regional plan. Nevertheless, it is still consistent in magnitude and comparable with the modelling results.

Overall, the two buffer distance criteria considered here give consistent distances with that of the dispersion modelling assessment. However, the dispersion modelling results are considered by Golder to be better as they provide:

- i) Greater detail in different directions
- ii) More accurately reflect actual odour emission rates as they vary with bird numbers, bird age and ambient temperature conditions
- iii) The approach has been validated several times in the Canterbury Region.

### 7.3 Area for Proposed Plan Change

The area of the Bagrie land that is the subject of proposed plan change is shown in the modelling contour plots for the existing and future shed configurations in Figure 7 and Figure 8, respectively. Both modelled scenarios show that the 5 OU/m<sup>3</sup> contour does not extend into the proposed plan change area to the southwest of the broiler sheds, but does extend into the area to the southeast. The area of the proposed plan change land that falls within the 5 OU/m<sup>3</sup> contour to the southeast of the broiler sheds is approximately three hectares.

### 7.4 Conclusions

An assessment of the potential odour effects resulting from the Bagries' broiler farm has been carried out. The assessment has considered the existing shed layout. However, as three of the four existing sheds have been significantly damaged in recent earthquakes and are to be replaced, the assessment has also considered the future shed layout.

A validated odour dispersion modelling approach for broiler farms has been used to determine the extent of the odour impacts. The focus of the assessment is the likely impact on the proposed rural residential subdivision of the Bagries' land to the southwest and southeast of the broiler sheds.



The predicted odour GLCs indicate that odours beyond 320 m from the existing broiler sheds in a southwest direction are unlikely to be offensive or objectionable. This means there is an area (approximately 3 hectares) of the proposed rural residential land where odour effects may be objectionable. Accordingly, Golder considers that residential uses in this area should be excluded or some other legal instrument used to mitigate potential effects in this area. This distance reduces to 300 m for the future shed layout.

## 8.0 REFERENCES

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# **APPENDIX A**

## **Report Limitations**



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# **APPENDIX B**

## **Chicken Shed Odour Emission Rate Calculations**



## CHICKEN SHED ODOUR EMISSION RATE CALCULATIONS

To run the modelling assessment and produce reliable predictions of the expected odour exposure levels due to the proposed broiler farm expansion it was necessary to establish an odour emission profile for the chicken operation. This was undertaken using the results of odour emission research on Australian chicken sheds.

The amount of odour produced from a chicken shed is primarily a function of temperature, number of chickens, their age and ventilation and litter management. Pacific Air and Environment (PAE) Australia has completed a report investigating these dependencies (PAE 2003). PAE established equations that related the number of chickens and ambient temperature to the amount of odour produced.

The odour emission rate (OER) per 1,000 birds (OU/s) is related to the ambient temperature as described in equation 1 below. The number of birds is based on the initial loading of the shed.

$$OER = 0.38 T^{2.404} \quad (\text{Equation 1})$$

The OER also is dependent on the age of the birds. To account for this a factor, *f*, is multiplied by the OER calculated from equation 1 to give an actual OER.

The areas within Australia where the studies were undertaken included high humidity conditions. It is reasonable to expect that the litter would be moister than chicken sheds in Canterbury with modern water dispensing system. Because of Christchurch's lower humidity during warm conditions and good litter management practice of the Bagrie operation, then the Australian odour emission data could be considered to be potentially conservative (i.e., higher than in New Zealand).

There is some debate regarding the effect of removing birds from the sheds on the odour emission rate. With high quality management of dry litter conditions, the odour emissions from the shed will be increasingly linked to actual bird numbers, but will not decrease in exact proportion to the fraction of birds removed from the flock.

For this assessment, it has been assumed that the number of birds in the shed following day no.1 has 40 % contribution to the overall odour emission. However, equation 1 does not take into consideration the reduction of chickens in the shed after day one. Therefore, the equation has been modified so that the overall odour emission does respond to the removal of birds from the flock. If 50 % of the birds are removed from the sheds, then the odour emission would reduce by 20 % (i.e. birds have only 40 % weighting on odour emission). Furthermore, it was assumed that for any ambient temperature below 15 °C, a minimum temperature of 15 °C was applied to equation 1 to ensure that a constant minimum odour emission is assumed to occur during cold conditions with minimal ventilation to atmosphere.

The equation used to calculate the odour emitted for each hour from each shed on the Bagrie farm is shown as equation 2:

$$OER_{Shed} = 0.6 \left( f 0.38 T^{2.404} \times \frac{N_{Initial}}{1000} \right) + 0.4 \left( f 0.38 T^{2.404} \times \frac{N}{1000} \right) \quad (\text{Equation 2})$$

- Where
- OER<sub>Shed</sub>** is the odour emission rate from the shed (OU/sec)
  - f** is the factor allowing for the chickens age, ranging between 0.15 and 1.
  - T** is the ambient temperature in °C (obtained from the met data) - a minimum of 15 °C was used if  $T \leq 15$  °C.
  - N<sub>Initial</sub>** is the initial number of chicks in the shed.
  - N** is the number of chickens in the shed on any one day.



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## **APPENDIX B**

### **Odour Emission Calculations**

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The number of chickens was calculated assuming a mortality of 1 % over the first week and an additional 2 % spread over the remaining time (42 days in total), as well as a typical profile for when matured chickens leave the farm.

Day 1 in the chickens' time at the farm was assumed to be the first day of the meteorological data set used for this assessment. A 56-day cycle was used (42 days with chickens then 14 days down time to clean out, disinfect/quarantine and place new litter).

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# **APPENDIX C**

## **Example Modelling Input File**



## APPENDIX C

### AUSPLUME Model Configuration

1178104-525 Bagrie - Shed 4-5 run

Concentration or deposition	Concentration
Emission rate units	OUV/second
Concentration units	Odour_Units
Units conversion factor	1.00E+00
Constant background concentration	0.00E+00
Terrain effects	None
Smooth stability class changes?	No
Other stability class adjustments ("urban modes")	None
Ignore building wake effects?	Yes
Decay coefficient (unless overridden by met. file)	0.000
Anemometer height	10 m
Roughness height at the wind vane site	0.300 m
Use the convective PDF algorithm?	No
Averaging time for sigma-theta values	60 min.

#### DISPERSION CURVES

Horizontal dispersion curves for sources <100m high	Sigma-theta
Vertical dispersion curves for sources <100m high	Pasquill-Gifford
Horizontal dispersion curves for sources >100m high	Briggs Rural
Vertical dispersion curves for sources >100m high	Briggs Rural
Enhance horizontal plume spreads for buoyancy?	Yes
Enhance vertical plume spreads for buoyancy?	Yes
Adjust horizontal P-G formulae for roughness height?	Yes
Adjust vertical P-G formulae for roughness height?	Yes
Roughness height	0.100m
Adjustment for wind directional shear	None

#### PLUME RISE OPTIONS

Gradual plume rise?	Yes
Stack-tip downwash included?	Yes
Building downwash algorithm:	PRIME method.
Entrainment coeff. for neutral & stable lapse rates	0.60,0.60
Partial penetration of elevated inversions?	No
Disregard temp. gradients in the hourly met. file?	No

and in the absence of boundary-layer potential temperature gradients given by the hourly met. file, a value from the following table (in K/m) is used:

Wind Speed Category	Stability Class					
	A	B	C	D	E	F
1	0.000	0.000	0.000	0.000	0.020	0.035
2	0.000	0.000	0.000	0.000	0.020	0.035
3	0.000	0.000	0.000	0.000	0.020	0.035
4	0.000	0.000	0.000	0.000	0.020	0.035
5	0.000	0.000	0.000	0.000	0.020	0.035
6	0.000	0.000	0.000	0.000	0.020	0.035

#### WIND SPEED CATEGORIES

Boundaries between categories (in m/s) are: 1.54, 3.09, 5.14, 8.23, 10.80

WIND PROFILE EXPONENTS: "Irwin Rural" values (unless overridden by met. file)

#### AVERAGING TIMES

1 hour

1

1178104-525 Bagrie - Shed 4-5 run with Rickerby fixed met

#### SOURCE CHARACTERISTICS



## APPENDIX C

### AUSPLUME Model Configuration

#### VOLUME SOURCE: SHED5E

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
1566344	5199649	0m	2m	4m	1m

(Constant) emission rate = 1.00E+00 OUV/second

Hourly multiplicative factors will be used with this emission factor.

No gravitational settling or scavenging.

#### VOLUME SOURCE: SHED5W

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
1566256	5199589	0m	2m	4m	1m

(Constant) emission rate = 1.00E+00 OUV/second

Hourly multiplicative factors will be used with this emission factor.

No gravitational settling or scavenging.

#### VOLUME SOURCE: SHED4A

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
1566382	5199577	0m	2m	4m	1m

(Constant) emission rate = 1.00E+00 OUV/second

Hourly multiplicative factors will be used with this emission factor.

No gravitational settling or scavenging.

#### VOLUME SOURCE: SHED4B

X(m)	Y(m)	Ground Elevation	Height	Hor. spread	Vert. spread
1566300	5199518	0m	2m	4m	1m

(Constant) emission rate = 1.00E+00 OUV/second

Hourly multiplicative factors will be used with this emission factor.

No gravitational settling or scavenging.

1

1178104-525 Bagrie - Shed 4-5 run

#### RECEPTOR LOCATIONS

The Cartesian receptor grid has the following x-values (or eastings):

1565300.m 1565325.m 1565350.m 1565375.m 1565400.m 1565425.m 1565450.m  
1565475.m 1565500.m 1565525.m 1565550.m 1565575.m 1565600.m 1565625.m  
1565650.m 1565675.m 1565700.m 1565725.m 1565750.m 1565775.m 1565800.m  
1565825.m 1565850.m 1565875.m 1565900.m 1565925.m 1565950.m 1565975.m  
1566000.m 1566025.m 1566050.m 1566075.m 1566100.m 1566125.m 1566150.m  
1566175.m 1566200.m 1566225.m 1566250.m 1566275.m 1566300.m 1566325.m  
1566350.m 1566375.m 1566400.m 1566425.m 1566450.m 1566475.m 1566500.m  
1566525.m 1566550.m 1566575.m 1566600.m 1566625.m 1566650.m 1566675.m



## APPENDIX C

### AUSPLUME Model Configuration

1566700.m 1566725.m 1566750.m 1566775.m 1566800.m 1566825.m 1566850.m  
1566875.m 1566900.m 1566925.m 1566950.m 1566975.m 1567000.m 1567025.m  
1567050.m 1567075.m 1567100.m 1567125.m 1567150.m 1567175.m 1567200.m  
1567225.m 1567250.m 1567275.m 1567300.m

and these y-values (or northings):

5198600.m 5198625.m 5198650.m 5198675.m 5198700.m 5198725.m 5198750.m  
5198775.m 5198800.m 5198825.m 5198850.m 5198875.m 5198900.m 5198925.m  
5198950.m 5198975.m 5199000.m 5199025.m 5199050.m 5199075.m 5199100.m  
5199125.m 5199150.m 5199175.m 5199200.m 5199225.m 5199250.m 5199275.m  
5199300.m 5199325.m 5199350.m 5199375.m 5199400.m 5199425.m 5199450.m  
5199475.m 5199500.m 5199525.m 5199550.m 5199575.m 5199600.m 5199625.m  
5199650.m 5199675.m 5199700.m 5199725.m 5199750.m 5199775.m 5199800.m  
5199825.m 5199850.m 5199875.m 5199900.m 5199925.m 5199950.m 5199975.m  
5200000.m 5200025.m 5200050.m 5200075.m 5200100.m 5200125.m 5200150.m  
5200175.m 5200200.m 5200225.m 5200250.m 5200275.m 5200300.m 5200325.m  
5200350.m 5200375.m 5200400.m 5200425.m 5200450.m 5200475.m 5200500.m  
5200525.m 5200550.m 5200575.m

METEOROLOGICAL DATA : CHCH 1997-98 Met Set. Release 2.

#### HOURLY VARIABLE EMISSION FACTOR INFORMATION

The input emission rates specified above will be multiplied by hourly varying factors entered via the input file:

D:\PROJECTS\2011\11781\_04\525\_Bag\Ausplume\Runs with Rickerby Met\R2\shed4and5

For each stack source, hourly values within this file will be added to each declared exit velocity (m/sec) and temperature (K).

Title of input hourly emission factor file is:

Baggie sheds 4-5 as volume sources

#### HOURLY EMISSION FACTOR SOURCE TYPE ALLOCATION

Prefix SHED5E allocated: SHED5E

Prefix SHED5W allocated: SHED5W

Prefix SHED4A allocated: SHED4A

Prefix SHED4B allocated: SHED4B

- 1 Peak values for the 100 worst cases (in Odour\_Units)  
Averaging time = 1 hour

Rank	Value	Time Recorded hour,date	Coordinates (* denotes polar)
1	6.70E+02	17,27/11/97	(***** 5199625, 0.0)
2	5.28E+02	15,20/03/98	(***** 5199650, 0.0)
3	4.37E+02	16,27/11/97	(***** 5199650, 0.0)
4	4.27E+02	19,21/03/98	(***** 5199650, 0.0)
5	4.12E+02	13,03/12/97	(***** 5199650, 0.0)
6	3.81E+02	13,12/10/97	(***** 5199625, 0.0)
7	3.77E+02	21,21/03/98	(***** 5199650, 0.0)
8	3.41E+02	15,18/12/97	(***** 5199625, 0.0)
9	2.99E+02	18,03/12/97	(***** 5199650, 0.0)
10	2.99E+02	16,08/01/98	(***** 5199650, 0.0)
11	2.66E+02	09,03/12/97	(***** 5199550, 0.0)
12	2.37E+02	13,19/01/98	(***** 5199675, 0.0)
13	2.34E+02	12,24/01/98	(***** 5199650, 0.0)
14	2.21E+02	19,03/12/97	(***** 5199650, 0.0)
15	2.02E+02	04,31/08/98	(***** 5199650, 0.0)
16	2.01E+02	24,30/11/97	(***** 5199550, 0.0)
51	1.29E+02	07,10/12/97	(***** 5199675, 0.0)
52	1.29E+02	05,18/07/98	(***** 5199625, 0.0)
53	1.25E+02	23,25/01/98	(***** 5199650, 0.0)
54	1.22E+02	05,26/01/98	(***** 5199675, 0.0)
55	1.21E+02	09,31/08/98	(***** 5199625, 0.0)
56	1.20E+02	13,29/01/98	(***** 5199525, 0.0)
57	1.20E+02	17,13/10/97	(***** 5199650, 0.0)
58	1.19E+02	04,26/01/98	(***** 5199650, 0.0)
59	1.19E+02	12,29/03/98	(***** 5199625, 0.0)
60	1.18E+02	24,25/01/98	(***** 5199650, 0.0)
61	1.18E+02	18,24/11/97	(***** 5199650, 0.0)
62	1.18E+02	07,20/07/98	(***** 5199650, 0.0)
63	1.18E+02	11,31/01/98	(***** 5199525, 0.0)
64	1.17E+02	22,28/01/98	(***** 5199650, 0.0)
65	1.16E+02	23,28/01/98	(***** 5199650, 0.0)
66	1.16E+02	05,01/10/97	(***** 5199650, 0.0)





## APPENDIX C

### AUSPLUME Model Configuration

17	1.95E+02	11,24/01/98	(*****	5199650,	0.0)	67	1.16E+02	09,10/04/98	(*****	5199650,	0.0)
18	1.86E+02	20,21/03/98	(*****	5199650,	0.0)	68	1.16E+02	14,14/11/97	(*****	5199550,	0.0)
19	1.79E+02	10,29/03/98	(*****	5199575,	0.0)	69	1.15E+02	20,18/07/98	(*****	5199675,	0.0)
20	1.74E+02	03,31/08/98	(*****	5199650,	0.0)	70	1.14E+02	04,02/12/97	(*****	5199650,	0.0)
21	1.67E+02	22,18/07/98	(*****	5199650,	0.0)	71	1.14E+02	10,24/11/97	(*****	5199650,	0.0)
22	1.66E+02	02,20/07/98	(*****	5199625,	0.0)	72	1.14E+02	11,24/11/97	(*****	5199650,	0.0)
23	1.66E+02	16,01/04/98	(*****	5199650,	0.0)	73	1.14E+02	12,29/01/98	(*****	5199650,	0.0)
24	1.65E+02	01,20/07/98	(*****	5199625,	0.0)	74	1.13E+02	10,18/05/98	(*****	5199650,	0.0)
25	1.64E+02	07,25/01/98	(*****	5199650,	0.0)	75	1.13E+02	12,20/11/97	(*****	5199650,	0.0)
26	1.64E+02	17,29/03/98	(*****	5199650,	0.0)	76	1.12E+02	13,24/01/98	(*****	5199525,	0.0)
27	1.61E+02	06,20/07/98	(*****	5199675,	0.0)	77	1.12E+02	03,18/12/97	(*****	5199650,	0.0)
28	1.60E+02	03,18/05/98	(*****	5199650,	0.0)	78	1.12E+02	17,30/03/98	(*****	5199650,	0.0)
29	1.57E+02	19,29/03/98	(*****	5199650,	0.0)	79	1.10E+02	14,25/01/98	(*****	5199525,	0.0)
30	1.56E+02	17,03/12/97	(*****	5199650,	0.0)	80	1.10E+02	15,24/11/97	(*****	5199650,	0.0)
31	1.56E+02	09,25/01/98	(*****	5199650,	0.0)	81	1.09E+02	16,23/12/97	(*****	5199650,	0.0)
32	1.55E+02	19,30/03/98	(*****	5199650,	0.0)	82	1.09E+02	10,25/01/98	(*****	5199575,	0.0)
33	1.54E+02	03,01/10/97	(*****	5199675,	0.0)	83	1.09E+02	02,16/07/98	(*****	5199650,	0.0)
34	1.53E+02	05,05/02/98	(*****	5199625,	0.0)	84	1.08E+02	13,25/03/98	(*****	5199650,	0.0)
35	1.49E+02	19,01/04/98	(*****	5199650,	0.0)	85	1.08E+02	01,31/01/98	(*****	5199650,	0.0)
36	1.48E+02	11,25/01/98	(*****	5199575,	0.0)	86	1.08E+02	14,24/01/98	(*****	5199525,	0.0)
37	1.48E+02	10,24/01/98	(*****	5199650,	0.0)	87	1.07E+02	07,31/08/98	(*****	5199625,	0.0)
38	1.47E+02	11,16/07/98	(*****	5199650,	0.0)	88	1.07E+02	13,25/01/98	(*****	5199525,	0.0)
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41	1.41E+02	13,26/11/97	(*****	5199650,	0.0)	91	1.06E+02	15,27/01/98	(*****	5199575,	0.0)
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43	1.36E+02	24,23/06/98	(*****	5199725,	0.0)	93	1.05E+02	01,08/10/97	(*****	5199650,	0.0)
44	1.35E+02	04,13/07/98	(*****	5199675,	0.0)	94	1.05E+02	03,07/02/98	(*****	5199650,	0.0)
45	1.34E+02	12,25/01/98	(*****	5199525,	0.0)	95	1.04E+02	10,29/01/98	(*****	5199650,	0.0)
46	1.34E+02	03,26/08/98	(*****	5199650,	0.0)	96	1.04E+02	10,24/03/98	(*****	5199575,	0.0)
47	1.31E+02	09,18/07/98	(*****	5199650,	0.0)	97	1.04E+02	13,19/12/97	(*****	5199575,	0.0)
48	1.31E+02	14,16/07/98	(*****	5199675,	0.0)	98	1.04E+02	13,24/11/97	(*****	5199650,	0.0)
49	1.31E+02	11,24/03/98	(*****	5199575,	0.0)	99	1.03E+02	09,18/05/98	(*****	5199650,	0.0)
50	1.29E+02	16,03/12/97	(*****	5199650,	0.0)	100	1.03E+02	04,21/05/98	(*****	5199650,	0.0)

i:\projects-numbered\11781x\04xxx\1178104\_525\_peter & ann bagrie\_bagrie poultry farm odour aee\reports (golder)\appendix c - model configuration.docx

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**Annexure 7      A Landscape and Visual Effects Assessment by Ben  
Espie of Vivian & Espie Ltd**

**P AND A BAGRIE**  
**PRIVATE PLAN CHANGE REQUEST**

**LANDSCAPE AND VISUAL EFFECTS ASSESSMENT  
REPORT**

**BEN ESPIE (LANDSCAPE PLANNER)**

**VIVIAN + ESPIE LTD**

**30 MARCH 2012**



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## INTRODUCTION

- 1 Peter and Anne Bagrie request a Private Plan Change in relation to an area of land adjacent to Ohoka. I have been engaged to assess and report on the effects of the proposed Plan Change that relate to landscape and amenity issues.
- 2 The details of the proposed Plan Change are set out in the Private Plan Change Request document that this report is attached to. In summary, the proposed Plan Change seeks the rezoning of the site from Rural Zone to Residential 4A Zone in order to provide for rural residential development. The proposal incorporates a requirement for all development of the site to be in accordance with a specific Outline Development Plan (ODP).
- 3 The intention of the proposed zoning is to provide for rural residential development. The result of the ODP and the various planning mechanisms that are incorporated into the proposed Plan Change is that a specific type and configuration of rural residential development will be provided for.

## THE EXISTING ENVIRONMENT

### Landscape Character

- 4 At a very broad scale, the site is located immediately adjacent to the existing settlement of Ohoka, in the northern part of the Canterbury Plains, being the vast area of deposited alluvial geomorphology used for relatively intensive grazing and cropping that connects the Southern Alps to Bank's Peninsula. The finer scale context of the site can be seen on the Appendix 1 plan that is attached to this report.
- 5 The south-western side of the site adjoins an existing rural residential area of Ohoka that is known as Keetly Place. In turn, the Keetly Place area adjoins a denser strip of residential development that fronts Mill Road, being Ohoka's main road. The north-western side of the site fronts Bradleys Road, on the opposite side of which lie open pastoral paddocks that are farmed by Wicklow Farming Ltd. The northern end of the site fronts the roughly formed Main Drain Road that runs along the southern raised stopbank of the Cust River, which has been channelised in this area. Immediately beyond the northern stopbank of the Cust River, Hicklands Road runs parallel to the river and to Main Drain Road. To the immediate south-

east of the site lie a collection of 4ha lifestyle blocks that gain access from Threlkelds Road, further to the east.

- 6 In short, the land that lies to the north and north-west of the site has an agricultural character that is relatively typical of the Canterbury Plains and is characterised by large areas of flat open pasture with views broken by the straight lines of maintained shelterbelts. The land that lies to the south-east of the site has an open lifestyle-block type of character which currently retains openness but is somewhat compartmentalised and includes a scattering of large dwellings at a density that belies any truly agricultural character.
- 7 The land to the south-west of the site has a different character again, it being part of the zoned settlement of Ohoka. As can be seen on the Appendix 2 plan that is attached to this report, Ohoka comprises of an area of Residential 3 zoning and an area of Residential 4B zoning. Together, these areas of zoning have developed in the form of a pleasant rural village that has a particularly treed and leafy character somewhat reminiscent of an English village, perhaps due to the numerous very mature European trees including many oaks and scattering of well-maintained old buildings. This leafy, partially enclosed and somewhat lush character is a point of difference from many Canterbury Plains settlements that often have a more exposed feel.
- 8 Upon closer inspection, it is possible to differentiate the character of the Residential 3 and 4B zones, the former having denser buildings with a more village main street character, and the latter a rural residential character. Although I consider that most observers with no knowledge of planning matters would simply read all of the settlement as effectively being of one character. In practice, the nearby parts of Mill, Jacksons, Threlkelds and Whites Roads also read as being part of the settlement.

### **Landscape values**

- 9 I have conducted no specific study into the community held values that are associated with the site or its vicinity, however, guidance can be taken from some of the relevant statutory documents.

- 10 The Canterbury Regional Policy Statement contains no spatially specific descriptions of landscape values but it refers to the Canterbury Regional Landscape Study<sup>1</sup>. The Canterbury Regional Landscape Study has effectively been replaced by the Canterbury Regional Landscape Study Review 2010, which categorises the area of the proposed Plan Change as being within the Lower Plains Land Type and the Low Altitude Plains Landscape Type. It makes the following statements regarding landscape values and naturalness:

*“For most New Zealanders the flat topography and patchwork patterning of the Plains landscape is the very essence of Canterbury. The contrast between the unmodified and rugged mountains, the sinuous patterning of the braided rivers and the manicured patchwork quilt of the plains has been recognised as distinctive and has inspired both literature and art. The plains are a prosperous agricultural landscape which is a valued economic resource and a symbol of farming productivity”<sup>2</sup>.*

- 11 The Canterbury Regional Landscape Study Review goes on to identify the outstanding natural landscapes and features of the region. The Canterbury Plans are not identified as either an outstanding natural landscape or an outstanding natural feature.<sup>3</sup>
- 12 Section 5 of the Waimakariri District Plan (WDP) discusses the outstanding natural landscapes and features of the district and identifies an area that includes the Puketeraki Mountains, Lees Valley and the front ranges including Mount Oxford through to Mount Thomas as being relevant in this regard. This part of the district is well removed from Ohoka.
- 13 Section 10 (Residential Zones) and Section 4 (Rural Zones) of the WDP contain a number of Objectives and Policies that generally seek to maintain and enhance the character of these zones (as I will expand on below).
- 14 I consider that it can be fairly concluded that the vicinity of the proposed Plan Change is valued by the community in that it is part of (albeit a very small part of) the rural Canterbury Plains, which are distinctive and important to the region’s landscape identity, but which fall short of being outstanding. The way in which the specific area of the Plan Change is valued must also be considered in relation to the somewhat distinctive character of Ohoka.

---

<sup>1</sup> Canterbury Regional Policy Statement, Part 20.4(1).

<sup>2</sup> Canterbury Regional Landscape Study Review 2010, Section C, page 57.

<sup>3</sup> Ibid, Section D.



## THE PROPOSED PLAN CHANGE

- 15 I have examined the information and plans that make up the proposed Plan Change. In this report I will not set out a detailed description of the proposal, as that information is provided in the Plan Change Request documentation. I will make the assumption that the landscape will change in the way set out by the proposed Outline Development Plan (ODP).
- 16 In broad terms, landscape change that would be enabled by the ODP would change the site from paddock land into a type of rural residential land use. 66 private allotments would be provided for, ranging between 0.3ha and 2.48ha in area. In addition, the site would contain public spaces in the form of:
- The road corridors,
  - Two local purpose reserves,
  - An open space and pedestrian/cycle/equestrian access strip along the site's south-eastern boundary that connects to Main Drain Road and the Cust River to the north-east, the paper road along the site's south-western boundary (also for pedestrian/cycle/equestrian access) and a link to a potential pedestrian/cycle access route to the south to the Ohoka River Track and Keetly Place (that then connects to Mill Road),
  - Two pedestrian/cycle access strips within the site that connect to the external pedestrian/cycle access network.
- 17 In addition to the above features, the proposed Plan Change includes a suite of provisions that would have the effect of restricting the specific way in which the site and each lot could be developed. These restrictions relate to such things as:
- The treatment of road corridors in relation to footpaths, drainage swales, lighting, etc,
  - The style, height and amount of fencing that is permissible,
  - The amount of the road frontage of any lot permitted to consist of paving,

- Setbacks of buildings from boundaries,

18 The general layout of development that the proposed Plan Change would enable can be seen on the ODP. I also attach to this report as Appendix 3, an Indicative Subdivision Landscape Treatment plan which sets out how the landowners intend to develop the site in response to the ODP. In practice, the ODP would ensure that the development that eventually occurs is as shown on the Indicative Subdivision Landscape Treatment plan, or at least is very similar. Essentially the change from paddocks to this development pattern is what I have assessed in terms of effects on amenity and landscape appreciation.

## **RELEVANT STATUTORY AND PLANNING DOCUMENTS**

19 The following statutory and planning documents are relevant to the consideration of the landscape and amenity related effects of the proposed Plan Change:

- The Resource Management Act 1991 (the RMA),
- The Canterbury Regional Policy Statement
- The Waimakariri District Plan
- The Waimakariri District Council's Rural Residential Development Plan

20 In this section I will briefly discuss the guidance that these documents lend to an assessment of the landscape effects of the proposed Plan Change. Following my assessment of effects of the proposed Plan Change, in the next section of my report, I will then discuss the consistency of the proposed Plan Change with these documents in my conclusion.

21 When discussing these documents below, I will not cite the text of the documents in detail. This will be done in the planning analysis that accompanies the Plan Change Request application. Rather, I will discuss what I consider each document seeks to achieve in relation to landscape and amenity matters.

### **The Resource Management Act 1991**

22 Matters from Part II of the RMA that are relevant to the assessment of landscape and amenity effects of development are found in Section 5 (purpose), Section 6 (matters of national

importance), and Section 7 (other matters). The regional and district level statutory documents, of course, take full account of the relevant parts of the RMA.

## **The Canterbury Regional Policy Statement**

- 23 The Canterbury Regional Policy Statement (CRPS) provides the foundation for the development of regional and district plans and deals with landscape matters in Section 8 of its Part 2. The Objectives of this section seek some protection for wetlands, biodiversity and ecological systems, historical and cultural heritage, and natural landscapes and features that contribute to Canterbury's distinctive character. In relation to this last point, the relevant Policies refer to landscapes and features that meet the criteria of sub-chapter 20.4(1) of the CRPS. I note that the site does not meet these criteria, i.e. it is not part of a landscape of regional significance.
- 24 Chapter 12A of the CRPS gives more specific guidance, particularly in relation to rural residential development. This chapter points out that rural residential development has the potential to adversely affect the existing character of rural areas and that this existing character should be protected. It also notes that rural residential development and can potentially hinder legitimate rural activities through reverse sensitivity issues<sup>4</sup>. In general terms, Chapter 12A endorses consolidation of existing population centres and the limitation of growth of rural residential land use<sup>5</sup>.
- 25 Policy 13 of Chapter 12A relates specifically to rural residential development. It sets out criteria that the location of any new rural residential development should comply with, generally in relation to servicing and the avoidance of hazards, reverse sensitivity issues, etc. Relevantly, Policy 13 seeks that Plan Changes that create rural residential development shall require that "an Outline Development Plan is prepared which sets out an integrated design for subdivision and land use, and provides for the long-term maintenance of rural-residential character".

---

<sup>4</sup> Canterbury Regional Policy Statement, Chapter 12a, page 5, Issue 7, and page 6, Objective 3(e).

<sup>5</sup> Ibid, page 5, Objective 1.

## **The Waimakariri District Plan**

- 26 The WDP sets out its resource management framework in its Section 13. This section notes that the district's rural environment is made up of 3 zones, while the urban environment is made up of 13 zones, including the two rural residential zones (4A and 4B), which are described as being "very low density, detached dwelling living environments in a rural setting"<sup>6</sup>, and it is noted that these zones "are also considered to provide urban environments. These areas are valued as small residential areas in rural settings with the benefit of some urban standard services"<sup>7</sup>.
- 27 Still within Section 13, Policy 13.1.1.2 seeks to avoid, remedy or mitigate the adverse effects of establishing new Residential 4A and 4B Zones by restricting them to locations where they will not adversely affect significant natural and physical resources or create conflict with neighbouring land uses<sup>8</sup>.
- 28 Regarding the district's Rural Zones, Objective 14.1.1 and its associated Policies seek to maintain and enhance the productive capacity and rural character of these zones and notes that this rural character provides the setting for the Rural Residential Zones (4A and 4B). The characteristics of the rural zones are then listed and include such things as the dominance of paddocks, trees, natural features and agricultural activities. It is also noted that residents of Rural Residential Zones benefit from the character of the rural landscape in which these zones are set, in terms of outlook<sup>9</sup>.
- 29 Section 15 of the WDP deals with the urban environment. Subdivision, development and land use should avoid or mitigate adverse effects on the rural setting of towns and settlements and on the individual character of the relevant settlement. Design and layout of subdivision and development should maintain and enhance the amenity provided by the various urban environments by providing links in the form of walkways, cycleways and roads, ensuring that lot layout maximises amenity and by integrating with existing adjoining urban areas<sup>10</sup>.

---

<sup>6</sup> Waimakariri District Plan, Section 13, Page 3, Policy 13.1.1.1, and Section 14, Page 3, Policy 14.1.1.4.

<sup>7</sup> Ibid, Section 15, Page 1, explanation associated with Policy 15.1.1.1.

<sup>8</sup> Ibid, Section 13, Page 4, Policy 13.1.1.2.

<sup>9</sup> Ibid, Section 14, Page 1, Objective 14.1.1, Policy 14.1.4 and the associated explanation.

<sup>10</sup> Ibid, Section 15, Objective 15.1.1 and associated Policies.

30 Regarding the district's residential zones, Objective 17.1.1 seeks residential zones that provide wellbeing and that provide a range of living environments with distinctive characteristics. The characteristics that give the residential zones their particular character are then sought to be maintained and enhanced, as are the differences between the various residential zones. The characteristics of the Rural Residential Zones are then described in more detail and, relevantly, they include:

- Predominant activity is living;
- detached dwellings and associated buildings;
- some limited farming and horticulture;
- dwelling density is lowest for Residential Zones;
- dwellings in generous settings;
- average lot size of 0.25-1.0 hectare;
- limited number of lots located in a rural environment;
- rural style roads or access-ways;
- opportunity for a rural outlook from within the zone;
- few vehicle movements within the zone;
- access to zones not from arterial roads;
- community water and/or sewerage schemes; and
- limited kerb, channelling and street lighting<sup>11</sup>

31 Section 18 of the WDP discusses the management of change within the district and constraints on development and subdivision. Policy 18.1.1.1 sets out that growth and development proposals should (among other things); demonstrate how and the extent to which they will maintain and enhance the characteristics of adjoining zones and the zone

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<sup>11</sup> Ibid, Section 17, Objective 17.1.1 and associated Policies and Explanation.

within which the proposal is located, and retain the rural environment between Residential 4A and 4B zones, towns and Residential 3 zones,

- 32 Policy 18.1.1.9 of Section 18 of the WDP specifically relates to Ohoka. It seeks to limit the Ohoka settlement to within its Residential 3 and 4B boundaries existing at 20 June 1998 in order to avoid drainage and effluent disposal issues and because additional development is likely to overwhelm the character, form and function of the Ohoka settlement.

### **The Waimakariri District Council Rural Residential Development Plan**

- 33 The Waimakariri District Council Rural Residential Development Plan (RRDP) is a non-statutory document adopted by the WDC in June 2010. Its purpose is to identify preferred locations for rural residential development.
- 34 In relation to Ohoka, the RRDP identifies the potential for rural residential development of no more than 150 households “centred on the existing village of Ohoka, without an identified growth location, as shown on Map Sheet 04”<sup>12</sup>. I reproduce Map Sheet 04 as Appendix 2 to this report, with the proposed Plan Change site highlighted.
- 35 The RRDP also notes that Policy 18.1.1.9 of the WDP that Limits the extent of the Ohoka settlement will need to be amended to accommodate the growth potential that has been identified and also notes the need “to ensure that the location, direction and extent, design or number of households associated with any growth and development is sympathetic to the character and values of the existing settlement.”<sup>13</sup>

### **Summary regarding the statutory and planning documents**

- 36 To paraphrase the above, I consider that the relevant outcomes in relation to landscape and amenity issues that the statutory and planning documents seek are:
- Rural residential development that maintains or enhances the existing character of the rural area in which it sits;
  - Rural residential development that maintains or enhances the individual character of the settlement it is part of;

<sup>12</sup> Waimakariri District Council Rural Residential Development Plan, June 2010, page 32.

<sup>13</sup> Ibid, page 33.

- Rural residential development that provides long term rural residential character and amenity for occupants, including the maintenance of the characteristics listed in Table 17.1 of the WDP (cited above in my paragraph 34), and the provision of amenity and integration with existing settlement via lot layout and links in the form of walkways, cycleways and roads;
- Rural residential development in Ohoka that is located in the general vicinity identified in the RRDP.

## **THE LANDSCAPE AND AMENITY RELATED EFFECTS OF THE PROPOSED PLAN CHANGE**

- 37 As discussed in broad terms above, the actual change to the character of the land that the proposed Plan Change will bring about is to effectively change the site from farmed paddocks into a development pattern as directed by the ODP. This change will have implications for the way in which the landscape is perceived and appreciated. The creation of the development that the proposed Plan Change would enable will have landscape and amenity related effects for observers outside the site itself, i.e. neighbours, visitors to the area, travellers on adjacent roads, users of adjacent public places, etc. The development will also create a certain type of amenity and landscape character for observers within the site itself, i.e. future occupants, users and visitors. I will give my findings on both of these issues in this section of the report.
- 38 For ease of reference, I attach a copy of the Indicative Subdivision Landscape Treatment Plan to this report as Appendix 3. It will be useful to refer to this plan while reading this part of my report.

### **External effects**

- 39 Regarding how the proposed Plan Change might affect amenity and landscape appreciation issues for observers outside the site itself, the potentially affected population can be divided into the following categories for the purpose of consideration:
- Users of adjacent roads, specifically Bradleys Road, Main Drain Road and Hicklands Road;
  - Users of relevant existing public places, specifically the paper road to the immediate southwest of the site and the Cust River and its banks;



- Occupants and owners of neighbouring land that potentially have some views or perception of the site.

## **Bradleys Road**

- 40 The relevant section of Bradleys Road runs southwest-northeast between Mill Road and Main Drain Road and can be seen on Appendix 1. Mill Road forms the main street of Ohoka and it is also used as a through-road to access other parts of the surrounding plains. Main Drain Road is of a gravel formation and follows the southern stop bank of the Cust River. Running west from the northern end of Bradleys Road, Main Drain Road is a relatively well formed gravel Road and it connects back to the sealed road network at Ashworths Road, some 2 kilometres to the west of Bradleys Road. Running east from the northern end of Bradleys Road, Main Drain Road is only roughly formed, taking the form of a single vehicle track along the top of the Cust River's southern stop bank. Therefore, while not quite a dead-end road, the section of Bradleys Road that runs north from Mill Road is not used as a through-road. It is effectively used only to access the properties that are immediately adjacent to it and by those who wish to access this part of the Cust River.
- 41 As can be seen from Appendix 1, the southern half of the section of Bradleys Road that lies to the north of Mill Road is fronted on one side by the rural residential properties of the existing Residential 4B Zone. The frontages that these rural residential properties present to the road are in the order of 50 to 60 metres long, are well vegetated and generally feature post-and-rail or post-and-wire fencing. The opposite side of Bradleys Road is characterised by open farmed paddocks and the two rural dwellings of Wicklow Farming and W and M Hewitt. The view across the subject site from Bradleys Road can be seen on Photograph D of Appendix 4 to this report.
- 42 With reference to the ODP and the associated Indicative Subdivision Plan, the proposed Plan Change would extend the existing line of rural residential frontages further along the eastern side of Bradleys Road by approximately 250 metres, being four new properties, and two new roads would branch off Bradleys Road. Beyond this extension of the rural residential pattern would lie the remainder of the Bagrie's farm in the form of open paddocks, clumps of shelter trees and a scattering of farm buildings including the existing large chicken sheds. From Bradleys Road, it will be possible to get views across parts of the Bagrie's farm to the rural

residential development that the Plan Change will enable, so the experience of being on Bradleys Road will change, not only for the 250 metres that is immediately fronted by new development.

- 43 In considering how the changes proposed will affect the experience of users of Bradleys Road, it is important to note some more detailed aspects of the proposed Plan Change. A suite of design controls form part of the proposed Plan Change, which govern (amongst other things) the design of the road frontages of properties. These controls apply to frontages with existing roads, such as Bradleys, and new roads that are created by the Plan Change. These design control will require that:

- The minimum building setback requirement from all internal boundaries, except road boundaries, shall be 5 metres.
- The minimum building setback requirement from all road boundaries shall be 15 metres.
- The maximum total building coverage of any allotment shall be 500m<sup>2</sup> or 10% of the total allotment area, whichever is lesser.
- Any boundary fences/walls and fences/walls within any setback area shall be restricted to traditional post-and-wire or post-and-rail fences only.
- Within the road boundary setback of any allotment:
  - The maximum total area of paving (including gravel surface) shall be 100m<sup>2</sup>;
  - A minimum of 1 specimen tree shall be planted and appropriately maintained for each 10 metres of road frontage. Specimen trees planted in accordance with this condition shall be of the following species: Maples, Silk tree, Alders, Oaks, Elms, Magnolias, Olives, Plane trees, Birches, Cypressess and Kowhai.
- The treatment of road corridors shall be in accordance with the ODP and shall incorporate the following elements:
  - A soft/grassed edge to all seal with no kerb and channel;
  - Grassed drainage swales with no piped drainage system;
  - No defined visitor parking on road verges;
  - Road marking to be kept to a minimum to comply with traffic safety standards;
  - A sealed footpath formed on one side of the road only;
- Specimen street trees planted at approximately 70 metre spacings on one side of the road.

- 44 The intention of these controls is to replicate the character of the existing rural residential areas of Ohoka and to present a soft, treed, green appearance. The treatment of the new road corridors is intended to continue the treatment of the rural residential roads of Ohoka (being Keetly Place and Wilson Drive). It must be noted that any new vegetation will take time to grow and hence the intention of these various design controls will not be realised immediately. However, the Ohoka area has good growing conditions as is evidenced by the Keetly Place and Wilson Drive areas that were developed in the 1990s and are now characterised by attractive, mature trees.
- 45 Regarding the experience of an observer on Bradleys Road, the controls described above will mean that the new lots that front Bradleys Road will be a seamless continuation of the character of the strip of rural residential land use that currently fronts the southern part of this section of road. From the part of Bradleys Road that will continue to be fronted by the Bagrie farm, parts of the proposed new development will be visible across farmland at distances ranging up to 600 metres. These views will be intermittent due to elements within the Bagrie farm, such as buildings and mature vegetation that will screen new development from view. The parts of the new development that will potentially be presented to views across the farm will very largely be the road frontages of new lots, with a road corridor in front of them. Therefore, these parts of the new development will also be particularly well vegetated and soft in appearance.
- 46 In an overall assessment, I consider that the proposal will affect the experience of users of Bradley Road in that the settled area of Ohoka will appear larger than it currently does and will stretch further down Bradleys Road. The character of the expanded developed area will be consistent and harmonious with the existing rural residential character of Ohoka and the much of the expansion will only be partially visible and often at a distance across established farmland. The landscape experience of these observers will continue to be of a pleasant rural type. I do not consider that the amenity or landscape experience that is had by users of Bradleys Road will be degraded to any degree that is more than slight.

### **Main Drain Road**

- 47 As has been outlined above, the part of Main Drain Road that runs east of Bradleys Road takes the form of a single vehicle track along the top of the Cust River's southern stop bank.

This part of Main Drain Road is not used to access any properties and does not act as a through-road to any other destination. It appears that the only use for this section of road would be for recreational purposes, perhaps in the form of walking, cycling and horse riding.

- 48 As can be seen on Photographs A and B of Appendix 4 of this report, looking south across the site from Main Drain Road, the site currently appears as Open pasture. The existing rural residential area of Ohoka simply appears as an area of dense varied trees. To the immediate southeast of the site, where a collection of 4ha lots begin, a scattering of large dwellings can be seen, which read as some rural living land use loosely associated with Ohoka township. This area is subject to proposed Plan Change 17 that seeks a rural residential density across an area of some 85ha.
- 49 Setting aside the currently proposed Plan Change and proposed Plan Change 17 momentarily, it must be assumed that the existing landscape will change at least to the degree that the collection of 4ha lots to the southeast of the site will incrementally be built on, thereby removing any truly agricultural character from the land that lies to the southeast of the subject site.
- 50 For the western half of the site's boundary with Main Drain Road, new development that is enabled by the proposed Plan Change will be seen by an observer on the stop bank of Main Drain Road at distances of approximately 300 and 600 metres, across the remaining Bagrie farm. This view can be seen on Photograph A of Appendix 4. As discussed in relation to Bradleys Road, the proposed controls in relation to the treatment of roads and road frontages will mean that the edge of the developed area that is presented to any viewer will be particularly vegetated and soft.
- 51 From the eastern half of the site's boundary with Main Drain Road, new development will be closer and more visually prominent. It will still be considerably softened by vegetation and part of the developments frontage with this part of Main Drain Road will consist of a public reserve space that will be designed so as to provide stormwater management and amenity.
- 52 In an overall sense, I consider that the experience of an observer on the relevant part of Main Drain Road will change in that it will become less remote, isolated and perhaps less peaceful to a degree. Currently the experience is of being in a rural farming setting on the banks of the Cust River with the settlement of Ohoka some distance away (except for the dwellings of the

4ha lots to the south-east of the subject site). The proposal will mean that the experience becomes that of being on the edge of the settled area rather than being some distance from it. Notwithstanding this, the experience of the Main Drain Road area will continue to be a high amenity one, of being on the treed banks of a river in a leafy and relatively rural setting. In addition, the formation of the public access link down the subject site's southeastern boundary that will, in turn, link into the walkway along the site's southwestern boundary, the Ohoka Stream Track, Keetly Place and Mill Road, will mean that this part of Main Drain Road becomes part of a network of pedestrian/cycle/equestrian access, increasing the usefulness of this amenity for the community. I therefore find that while the experience of using Main Drain Road will change and the experience provided by the proposed situation will be different to that of the existing situation, it cannot be said to be lesser or degraded in terms of amenity to any degree that is more than slight.

### **Hicklands Road**

- 53 Hicklands Road follows the northern stopbank of the channelised portion of the Cust River. The road formation sits at the bottom of the stopbank itself, on its northern side. The river course itself is relatively densely treed with mature willows.
- 54 Due to the intervening stopbanks and trees, a user of Hicklands Road effectively has no view of the area of the proposed Plan Change. If one climbs up the stopbank adjacent to Hicklands Road, a view can be gained that is similar to, although slightly more obscured than, the views gained from the stretch of Main Drain Road described above. In essence, the proposed Plan Change will have practically no effect on users of Hicklands Road.

### **The unnamed paper road adjacent to the southwestern boundary of the subject site**

- 55 An unnamed paper road of 20 metres width separates the subject site from the northeastern boundaries of the strip of rural residential lots that lie on the northern side of Keetly Place, as can be seen on Appendix 1. The paper road joins Bradleys Road at a right angle. It is not currently used for access and it takes the form of a grassed strip. On its northern side a line of mature mixed shelter trees form a complete band between it and the subject site. These trees are on the site itself and are proposed to be retained. On its southern side mature tree and shrub vegetation within the various rural residential lots also effectively form a complete band

of high vegetation. A View down this paper road is shown on Photograph C of Appendix 4 to this report.

- 56 Under the proposed Plan Change, this paper road is envisaged as a pedestrian/cycle/equestrian access strip that would connect to a pedestrian/cycle track that accesses the central area of the proposed development, as can be seen on the Indicative Subdivision Landscape Treatment Plan (Appendix 3 to this report). At its southeastern end, the paper road track would connect to a pedestrian/cycle/equestrian access strip that runs northeast, along the site's boundary to connect to Main Drain Road and the stopbank of the Cust River. At this southeastern point, it would also connect to a pedestrian/cycle link that would run southwest to meet with the Ohoka Stream Track and Keetly Place, which links to Mill Road. Consequently, this paper road would become part of a track network that would provide various loop options for walking and cycling and would provide easy access from the development enabled by the proposed Plan Change to the Mill Road area of Ohoka township. The well-established trees and other vegetation mean that this paper road corridor will provide a pleasant and leafy type of amenity for future track users.
- 57 Given that the paper road is currently unused, I consider that the proposed Plan Change will have positive effects. The paper road currently provides no useful amenity to the community. Under the proposed situation, it will become part of a useful network of tracks that will provide pedestrian and cycle access around the Ohoka settlement in general and will provide the experience of being in a green corridor adjacent to rural residential development.

### **The Cust River and its banks**

- 58 As has been set out previously, the part of the Cust River that is in the vicinity of the site is channelised and has earth stopbanks on either side. I am unaware of the nature of recreational use of this part of the river, other than that the stopbanks provide a pleasant, although currently rather isolated, location for walking, cycling, horse riding, etc. Also as mentioned previously, the proposed Plan Change will connect the southern stopbank area to a network of tracks that link back to the central area of the Ohoka township.
- 59 The effects of the proposal in relation to Main Drain and Hicklands Road are discussed above. Main Drain Road takes the form of a single vehicle track along the river's southern

stopbank, while the stopbank on the northern side takes the form of a grassed verge with Hicklands Road at its foot.

- 60 I can see no landscape or amenity related effects of the proposed Plan Change on the Cust River itself. Access to and along this river will be improved by the proposal and the stopbanks and willows associated with the river's course effectively make the site invisible for an observer that is in the river's bed or its immediate margins.

### **Occupants and owners of neighbouring land**

- 61 Neighbouring land that may be relevant in relation to the effects of the proposed Plan Change is shown on Appendix 1. To the northwest of the site lies the farmland of Wicklow Farming Ltd and the smaller lot and dwelling of W and M Hewitt. To the northwest of the site, beyond Main Drain Road, the Cust River and its stopbanks and Hicklands Road, lie a number of rural lifestyle type properties. To the southeast of the site lies a collection of 4ha rural lifestyle type properties and to the southwest of the site lies the denser rural residential area of Ohoka.

#### To the northwest of the proposed Plan Change site

- 62 The appearance of the development of the site that would result from the proposed Plan Change when seen from the northwest is described above in relation to effects on Bradleys Road; the southern 250 metres of road frontage will become a continuation of the strip of rural residential properties that front this road. The remainder of the southeastern side of Bradleys Road will remain unchanged, but there will be views available across the Bagrie Farm to rural residential development that, in time, will be considerably softened by trees.
- 63 The Wicklow Farming Ltd land to the northwest of the site across Bradleys Road takes the form of open grazed and cropped pasture. A small part of this pasture will be immediately opposite the extension to the rural residential area of Bradleys Road. People working in or occupying this part of the Wicklow Farming Ltd property will notice the extension of rural residential land use that would be enabled by the Plan Change, however, given that much of the Wicklow Farming Ltd land already fronts rural residential land use to the immediate southwest of the proposed extension and given that the relevant part of the Wicklow Farming Ltd land is unoccupied and used purely for farming purposes, I do not consider that these will



be any significant effect on the amenities or landscape appreciation of owners and occupants of the Wicklow Farming Ltd land.

- 64 The W and M Hewitt property is 0.8ha in area at the junction of Bradleys and Main Drain Roads and accommodates a dwelling. I understand that the property also includes a dog kennel and cattery operation. The land within the Bagrie farm that lies opposite the Hewitt property is not subject to the proposed Plan Change. The Hewitt property is heavily treed along its frontage with Bradleys Road such that the dwelling effectively gets no view towards the Bagrie farm. The Hewitt dwelling is oriented to the north. Future rural residential development that would be enabled by the proposed Plan Change will be between 300 and 500 metres from the Hewitt property. As has been discussed in relation to views from Bradleys Road, the edge that the rural residential development will present to potential view will be particularly soft, given the controls that are proposed on road corridor and road frontage treatment. Also, the vegetation and buildings within the remaining part of the Bagrie farm will visually obscure much of the Plan Change site from the vicinity of the Hewitt property. Again, I find that any potential effects of the proposed plan change on the amenity and landscape experience that is had from the Hewitt property will not be significant.

To the northeast of the proposed Plan Change site

- 65 The rural lifestyle type properties that lie across the Cust River from the subject site range between 10 and 26ha in area. Only two properties are actually opposite the area in which zoning is proposed to change. Due to the densely treed course of the Cust River and the two intervening stopbanks, there are no views available from these properties into the subject site. I consider that the proposed Plan Change will have practically no effect on these properties.

To the southeast of the proposed Plan Change site

- 66 An approximately 85ha area made up of rural lifestyle sized properties (mostly 4ha lots) runs between subject site and Threlkelds Road. It appears that approximately half of these existing lots have been built on to date. This area is subject to proposed Plan Change 17 (PC17) that seeks Residential 4 zoning that would allow for some 130 lots. Immediately adjacent to the subject site are a strip of six 4ha lots, which are within the PC17 area.

- 67 This land currently has the character of a relatively recently established rural lifestyle area. A scattering of large and rather new looking dwellings can be seen from the Cust River stopbank, Threlkelds Road and Mill Road. It appears more intensely occupied and cluttered than a purely agricultural part of the Canterbury Plains but open paddocks currently still dominate.
- 68 From approximately the northwestern half of this 1.2ha area, there are currently views across the subject site towards the north and west. These views are sometimes broken by existing elements within the subject site such as buildings or mature trees. Also, some lines of juvenile trees are maturing along the subject site's southeastern boundary. Certainly, the strip of 4ha lots closest to the subject site gain relatively long, open views of a rural character across farmland due to the subject site being managed in the way it currently is. A view down the site's southeastern boundary from Main Drain Road is shown in Photograph B of Appendix 4.
- 69 Regarding the effect of the proposed Plan Change on the outlook of these landowners, the treatment of the southeastern edge of the development that the proposed Plan Change will enable will include a 25 metre wide reserve strip that will be considerably landscaped (as is indicated on the Indicative Subdivision Landscape Treatment plan). Beyond this reserve strip will be the first row of rural residential properties. Regarding how these properties front the reserve strip, no solid fencing will be permissible although vegetation is not restricted. In my experience, owners of residential properties that adjoin reserve strips practically always considerably plant the area of their property that is adjacent to the reserve in order to provide privacy. This will particularly be the case given that solid fencing is not permissible. Therefore, I consider that the outlook to the northwest from the properties that neighbour the subject site will become considerably less open and considerably less characterised by agriculture than it currently is. It will, however, develop to be particularly green and treed, although parts of dwellings will certainly be visible.
- 70 Leaving outlook aside momentarily and turning to other amenities, the proposed Plan Change will mean that occupants of the rural lifestyle type properties that adjoin the subject site will have immediate access to a landscapes reserve strip that provides access that links to the Cust River stopbank, Keetly Place, the Ohoka River Track and ultimately Mill Road. This will equate to a pleasant recreational amenity and useful off-road pedestrian access to the central part of the Ohoka settlement.

- 71 In overall terms regarding these neighbours to the southeast of the subject site, I consider that the main effect of the proposed Plan Change will be on outlook. The nature of this effect will be a reduction in openness and rural character of a moderate to substantial degree. In relation to those who choose to live in a rural lifestyle type of setting, I consider that this effect is adverse. These landowners will no longer have the experience of being on the edge of rural living development associated with Ohoka with farmland to their north, they will feel that they are part of rural living type development that extends north beyond their own immediate vicinity.
- 72 The effect will be mitigated, however, by measures that ensure the relevant outlook will become green and considerably vegetated and by the inclusion of the amenity of the reserve strip and its links. It also must be noted that while the subject site is currently managed so as to provide for open views, in my understanding the boundary of the subject site could be planted with a shelterbelt, for example, at any time.
- 73 As mentioned above, the land to the southeast of the subject site is subject to proposed PC17. I understand that PC17 has not been subject to a Council hearing or decision and hence the outcome of it is uncertain. However, in the event that PC17 proceeds in some form, this neighbouring land will become rural residential in nature and will feature lots of approximately 0.5ha in area. The effects of the currently proposed Plan Change on this neighbouring land outlined above will remain essentially the same; the outlook of the neighbouring lots close to the subject site will be affected. However, if PC17 proceeds, these neighbours will have a considerably less open and rural landscape experience than they currently do, regardless of what happens on the subject site. The positive aspects of the currently proposed Plan Change mentioned above (certainty regarding a vegetated outlook and the benefits of reserve and track links) will also apply to future occupants of lots created by PC17, in the event that PC17 proceeds.

To the southwest of the proposed Plan Change site

- 74 To the southwest of the site, beyond the paper road discussed in paragraphs 55 to 57, lie a collection of rural living lots that are accessed off Keetly Place and Bradleys Road. These lots are generally around 1.5ha in area and each accommodates a dwelling. The dwellings are generally well set back from the boundary of the paper road (often between 40 and 70

metres) and are oriented to the north. These lots are generally very well treed and there is little inter-visibility between the dwellings and the paper road (a good impression can be gained from Photograph C of Appendix 4). On the northeastern edge of the paper road (within the subject site itself) runs a practically continuous line of mature mixed evergreen and deciduous shelter trees that are proposed to be maintained.

- 75 I consider that the type of amenity and landscape experience that is currently enjoyed by the occupants of these neighbouring lots is a pleasant rural living form of experience including considerable privacy, peacefulness and rural character and outlook, although the outlook does not take the form of open views across any agricultural land, rather a somewhat enclosed, vegetated, leafy type of character is evident. While these occupants may feel that they are on the edge of residential land use associated with Ohoka, this is due to a knowledge of what lies beyond their northeast boundary, rather than due to any visual evidence of this.
- 76 Regarding the effect of the proposed Plan Change on the outlook of these landowners, the paper road immediately adjacent to these neighbours will be formed as a green corridor with pedestrian/cycle/equestrian access, some additional avenue type tree planting and the existing shelter trees on the subject site's boundary being maintained. Beyond this paper road strip will be the first row of rural residential properties, which will have a frontage length onto the paper road that is similar to the frontages on the opposite side of the paper road. Again, the properties enabled by the proposed Plan Change will not feature any solid fencing but may feature new tree planting in addition to the considerable screen provided by the existing shelter trees. Any dwellings must be set back at least 15 metres from the paper road boundary. Overall, I consider that the outlook towards the northeast from the properties that neighbour the subject site will be practically unchanged, except that in time, some additional trees may be noticeable. In terms of a visual appreciation of landscape and amenity, I consider that any effect will be negligible.
- 77 As mentioned in relation to other neighbours, under the proposed Plan Change the occupants of these rural living properties accessed off Keetly Place will benefit from being immediately adjacent to a formed pedestrian track that will be part of a pleasant and useful network of tracks that will allow off-road access to reserves, the Ohoka River Track and the Cust River stopbanks.

## **Internal effects**

- 78 The specific type of development that will occur within the site if the proposed Plan Change proceeds will be shaped by the ODP and the associated design controls. A good impression of the development that this will enable can be gained from the Indicative Subdivision Plan and the Indicative Subdivision Landscape Treatment Plan. The specifics of the development will determine the type of amenity and landscape experience that future occupants and users of the site will have. In order to examine this type of amenity and landscape experience, we must consider the ODP and the associated controls.

### **The outline development plan and associated controls**

- 79 In summary, development enabled by the proposed Plan Change will incorporate the following features that are relevant to the type of character and amenity that will be provided:
- the provision of a variety of lot sizes to avoid a character of uniformity. Larger lots are provided further away from the existing Ohoka settlement in order to consolidate most density closer to the existing settlement centre. Larger lots are also provided adjacent to the Keetly Place development so as to create consistency of character. Clusters of smaller lots are then provided for in internal locations and these lots all front onto reserves, rural farmland or larger lots in order to maintain pleasant rural residential character for future occupants. This lot layout in conjunction with the overall shape of the Plan Change area means that any given lot (particularly any smaller lot) is either adjacent to the edge of the development area (i.e. adjacent to farmland) or is adjacent to a larger lot. This avoids the situation where an occupant of a centrally located lot has the experience of being surrounded by a vast expanse of lots used for residential purposes (albeit rural residential purposes) and hence experiences reduced rural character and amenity.
  - the treatment of internal road corridors has been designed so as to provide a particularly soft and rural type of character featuring large grassed verges, absence of kerb and channel, single footpaths and avenues of street trees that continue the character of the existing rural residential areas of Ohoka. Every lot either fronts onto a road corridor or a reserve.

- pedestrian/cycle links via green corridors that provide connections around and through the proposed development and connect to Main Drain Road and the Cust River stopbank, the Ohoka River Track and Keetly Place and Bradley Road. The corridor strips that follow the site's southeastern and southwestern boundaries are also envisaged to accommodate equestrian access. Overall, these green links will provide various walking/cycling/equestrian loop options for existing residents of the Ohoka settlement and will allow occupants of the new development to easily access Mill Road and the centre of Ohoka without using roads.
- design controls and restrictions on the manner in which individual lots may be developed, particularly in relation to fencing, setbacks and road frontage treatment. These restrictions will mean that dwellings are well set back and the road frontages of future lots will have a particularly soft, green and treed character, consistent with the existing rural residential areas of Ohoka. A restriction is also proposed on the amount of paving that may be within the road setback area of any property such that driveways or vehicle hardstand areas will not be a dominant part of the street frontage. In addition, boundary treatments cannot involve high, visually impermeable fences, thereby avoiding the potential for a suburban-like compartmentalisation of the landscape.
- Building coverage within any individual allotment is also restricted. In conjunction with the various setback and landscaping conditions discussed above, this will ensure a relatively high proportion of open space within the site.

**The type of amenity and landscape experience that will be provided within the site by the proposed Plan Change**

80 I make the general finding that future occupants and users of the site (if the proposed Plan Change proceeds) will experience a type of amenity that is more rural in nature than a suburban landscape but more urban (or suburban) than a true farming landscape. By nature, this is the type of change that any rural residential development will bring to a site. Privacy, outlooks across rural land uses, spaciousness and quietness will be experienced to a higher degree than one would expect in a suburban area.

81 More specifically, based on the points that I set out in my paragraph 79 above, I consider that, despite including some areas of smaller lots (some down to 0.3ha), the development that would be enabled by the proposed Plan Change would provide future occupants and users with a pleasant, rural residential type of amenity that is consistent with Ohoka's existing character and that avoids a suburban character because:

- When using the public parts of the future development, users will experience a character that has specifically been designed to impart rural residential character and to continue the character that is currently evident in the existing rural residential parts of Ohoka. This relates to the treatment of the road corridors themselves as described above and the manner in which allotments adjoin them, i.e. with no visually impermeable fences, with broad setbacks, limited paving and a minimum amount of tree planting.
- When within any given lot, users and occupants will experience a character that does not include any trappings of suburban development and that includes rural outlook over adjacent land, whether over existing farmland or over wide vegetated road corridors and larger rural residential lots. Privacy between dwellings will primarily be provided by vegetation rather than fencing (as is consistent with Ohoka's existing rural residential areas).
- Future occupants will have an awareness of the entirely rural land uses that lie to the north of the site across Bradleys Road, on the remnant area of the Bagrie farm, and around Ohoka in general. This awareness may not necessarily stem from direct visual contact to the surrounding landscape from each individual new allotment. In many cases it may stem from the connections to the surrounding rural landscape that are provided by the track network, from the experience of travelling to or from the site or simply the feeling that open rural space is not far away. This feeling of connection to a truly rural or farming landscape (rather than simply being in a suburb of a city or town) in turn leads to the perceived qualities of space, privacy, clean air, etc. that are sought by those who choose to live in a rural residential development.
- Given the fencing controls, tree planting requirements in relation to road setbacks, the character of the existing rural residential areas of Ohoka, and the growing



conditions of the area, I consider that it is likely that the future lots enabled by the Plan Change would be developed to be relatively densely treed so as to replicate the somewhat enclosed and leafy character that is typical of Ohoka.

- 82 I consider that it is fair to say that the proposed Plan Change will provide a genuine rural residential type of amenity for future occupants and users (as opposed to some sort of large lot suburban type of character) and that this character will be consistent with the existing rural residential areas of Ohoka.

## **CONCLUSIONS**

### **Summary of effects of the proposed Plan Change**

#### **External effects**

- 83 The proposed Plan change will result in a continuation of the existing pattern of rural residential development up Bradley's Road and in distant rural residential development being intermittently visible from this road across the Bagrie farm. The design of the Plan Change and measures that form part of it will mean that the changes that are experienced from Bradley's Road harmonise with existing character. Any effect on amenity or landscape appreciation will be slight.
- 84 Under the proposed Plan Change, the experience of being on the adjacent section of Main Drain Road and the Cust River stop-bank will become less remote and isolated but will become that of being on part of a network of green corridors and tracks, increasing recreational amenity. Any overall effect on amenity or landscape appreciation will be slight at worst.
- 85 The proposed Plan Change will mean that the currently unused paper road on the site's southwestern boundary will become a pedestrian and cycle access-way with a treed character that forms part of the abovementioned network. Hence I consider that any effect in relation to this paper road is positive.
- 86 Regarding neighbouring land owners, the land to the northwest of the site is farmed pasture with the Hewitt dwelling at the junction of Bradley's and Main Drain Roads. Given the nature

of the edge that development enabled by the Plan Change will present to Bradley's Road, the Plan Change will not lead to any significant effects in relation to landscape and amenity issues.

- 87 In relation to the land to the southeast of the site that comprises of rural lifestyle type properties, the proposed Plan Change will result in an adverse effect on outlook of a moderate to substantial degree due to a decrease in openness and rural character. This effect will be mitigated by measures that ensure the new outlook of these neighbours will become considerably vegetated and green and by the benefit that these neighbours will gain from the proposed reserve strip and track network. If we consider the land to the southeast as if PC17 is operative, the effect of the currently proposed Plan Change would be much the same although in this situation these neighbours would have a considerably less rural and less open landscape experience than they currently do, regardless of what happens on the subject site.
- 88 Regarding neighbours to the southwest of the site, the outlook and visual landscape appreciation of these neighbours will be practically unchanged by the proposed Plan Change. Consequently any landscape related effect will be negligible. These neighbours will also gain the benefits of the immediately adjacent pedestrian/cycle track that will form part of the previously described network.

### **Internal effects**

- 89 The ODP and the associated design controls will bring about a specific type of development within the site that will result in a specific type of amenity and landscape experience for future occupants and users. These aspects of the proposed Plan Change have been formulated in order to impart the public parts of future development with a rural residential form of character that continues the character that is evident in the existing rural residential parts of Ohoka. Additionally, within the private lots of a future development, the trappings of suburban development will be avoided, rural outlooks and an awareness of immediately adjoining rural land uses will be preserved. A genuine rural residential form of amenity will be provided that is consistent with the existing Ohoka Settlement.

## **The effects of the proposed Plan Change in relation to the relevant statutory and planning documents**

### **The Waimakariri District Council Rural Residential Development Plan**

- 90 The proposed Plan Change would result in 66 rural residential lots. Obviously, this would be only part of the maximum of 150 households that the RRDP envisages for Ohoka. In this regard, it is noted that other locations around Ohoka potentially provide for similar development. One possibility is the location that is suggested by proposed PC17.
- 91 Regarding the location of the development that would result from the proposed Plan Change, the RRDP suggests *“development centred on the existing village of Ohoka, without an identified growth location, as shown on Map Sheet 4”*<sup>14</sup>. As can be seen on my Appendix 2, Map Sheet 4 shows a circle that contains the existing Keetly Place and Wilson Drive developments. Approximately 60% of the area of the proposed Plan Change area is outside the circle. I do not consider this to be a material point. Obviously, the circle identified on Map Sheet 4 is not intended to be a development or zone boundary, it is merely intended to indicate that new rural residential development should be centred around the existing developed area of Ohoka, and the proposed Plan Change will be in accordance with this. I reiterate that the proposed Plan Change includes most of its density towards the southwestern end of the subject site, with larger lots making up its northeastern end, thereby centring most households closer to existing development and the Map Sheet 4 circle.
- 92 The RRDP also identifies the need *“to ensure that the location, direction and extent, design or number of households associated with any growth and development is sympathetic to the character and values of the existing settlement.”*<sup>15</sup> As has been discussed in this report, many measures and design approaches have been used in relation to the formulation of the proposed Plan Change in order to ensure that development that results from the Plan Change will be sympathetic to and consistent with the character of the existing settlement of Ohoka. Again, I consider that the intentions of the RRDP are achieved.

<sup>14</sup> Waimakariri District Council Rural Residential Development Plan, June 2010, page 32.

<sup>15</sup> Ibid, page 33.

## The Waimakariri District Plan

93 To paraphrase my paragraphs 26 to 32, the WDP relevantly seeks that:

- New rural residential development is located such that it does not create significant adverse effects and does not conflict with neighbouring land uses;
- The productive capacity and character of the Rural Zones, and the rural setting of towns, are maintained and enhanced;
- The distinctive character of each residential area is maintained and enhanced;
- The amenity of urban environments (including rural residential environments) is maintained and enhanced by providing road, cycleway and walkway links, by maximising amenity of new developments and by integrating new development with existing urban environments;
- The identified characteristics of rural residential zones are maintained and enhanced;

94 Following the discussion set out in this report, I find that, in relation to landscape and amenity matters, the proposed Plan Change will not adversely affect or conflict with the rural farmlands that adjoin the Plan Change site. The setting of the proposed Plan Change will retain its rural character.

95 Notwithstanding the above, I have identified one area in which the proposed Plan Change will lead to effects that are moderate to substantial in degree; the outlook of the rural lifestyle lots to the southeast of the subject site will become less open and less rural in character. For those who seek a rural living experience, this effect will be adverse. In relation to this finding, I consider that it is relevant to note that this effect will be mitigated by the vegetated and soft edge of development that will be presented to these neighbours and by the inclusion of a public track network that these neighbours will have immediate access to. It is also relevant to note that these neighbours themselves seek to change the zoning of their land to Residential 4A via proposed PC17. Any plan change that changes rural zoning to rural residential zoning will inevitably have some effect on the outlook of immediate neighbours. I consider that in practical terms, this sort of effect is unavoidable if rural residential growth is to occur as

provided for by the RRDP. In this particular case, I consider that the effect has been mitigated as much as possible and is considerably less in degree than it would be in relation to many other alternative locations, since other locations are likely to have more direct interface with neighbours.

96 I find that the distinctive character of Ohoka settlement will not be compromised, other than that the township will grow in the way that is anticipated by the RRDP. Growth in itself will change the atmosphere and character of any settlement to some degree, even if the new growth is entirely in keeping with the existing settlement's design; the settlement will simply feel bigger. However, I do not consider that this to be an adverse effect that is unanticipated by the statutory and planning documents since growth is expressly provided for (particularly by the RRDP). In this regard, I consider that the important point is the one that I make above; that the proposed Plan Change has been formulated in order to provide growth that is sympathetic to and consistent with the character of the existing settlement of Ohoka.

97 I consider that the type of amenity and character that future occupants and users of a development enabled by the proposed Plan Change will be of a high standard, will be well linked and integrated with the existing settlement in terms of roading and particularly pedestrian and cycle access, and will provide all the characteristics of rural residential living that are identified by the WDP.

### **The Canterbury Regional Policy Statement**

98 The site is not part of any landscape of regional significance identified by the CRPS and therefore the proposed Plan Change is not inconsistent with the general landscape aspects of the CRPS.

99 The proposed Plan Change is consistent with Chapter 12A of the CRPS, particularly Policy 13 in that it uses an ODP in order to ensure that development is integrated with existing settlement and provides a rural residential form of amenity and character for future occupants, as has been discussed.

### **The Resource Management Act 1991**

100 Following an overall assessment, I find that the proposed Plan Change is consistent with the parts of the Act that I discuss in my paragraph 22.

## **Overall Conclusion**

101 In summary, I find that the proposed Plan Change will change the site from pasture to a rural residential pattern of development and will grow the rural residential settlement of Ohoka. The Plan Change has been carefully formulated in order to create development that will provide a pleasant rural residential form of amenity for future occupants and users, that is consistent with Ohoka's character and that will not significantly degrade the character and amenity of the surrounding rural areas. However, one particular group of neighbouring properties will have their outlook affected to a moderate to substantial degree. This effect will be mitigated by various measures and this type of effect is practically unavoidable to some degree or another if rural residential growth is to be provided for.

Ben Espie  
**VIVIAN + ESPIE**  
30 March 2012.



